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DEPARTMENT OF DEFENSE

OFFICE OF CIVIL DEFENSE



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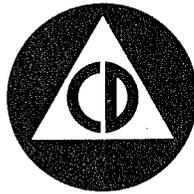
**DEPARTMENT OF DEFENSE
OFFICE OF THE SECRETARY OF THE ARMY**

Annual Report

of the

United States

Office of Civil Defense



For Fiscal Year

1967

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THE SECRETARY OF DEFENSE

WASHINGTON

9 February 1968

MEMORANDUM FOR THE PRESIDENT

In compliance with section 406 of the Federal Civil Defense Act of 1950 and section 5 of Executive Order 10952 of July 20, 1961, I submit herewith the sixth annual report of the Office of Civil Defense, covering civil defense functions assigned to me.



ROBERT S. McNAMARA

III

THE SECRETARY OF THE ARMY

WASHINGTON

18 January 1968

MEMORANDUM FOR THE SECRETARY OF DEFENSE

Submitted by the Acting Director of Civil Defense, Mr. Joseph Romm, and transmitted herewith is the sixth annual report of the Office of Civil Defense.

Stanley Resor

STANLEY R. RESOR

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INTRODUCTION

The civil defense program is designed to save lives, limit damage, and speed recovery in the event of nuclear attack against the United States. The primary focus in civil defense is the development of a nationwide fallout shelter system through the dual-purpose use of existing public and private structures to provide protection from radioactive fallout for everyone in the United States. This primary effort and its allied emergency systems are administered by the Office of Civil Defense through the legally constituted authorities of State and local governments. The concept of joint responsibility which has been followed over a period of years was reaffirmed by the President in his fiscal year 1968 budget message to the Congress when he said:

* * * Federalism is not a one-sided partnership, and the States and local governments do not exist simply to carry out programs on behalf of the National Government. When we lose sight of these facts, the Federal system suffers, governments work at cross purposes and the programs fail to achieve their objectives.

Civil defense maintains a unique position within the Nation's defense establishment as it works on a day-to-day basis with all 50 State governments and with governments of thousands of local jurisdictions, and it receives support from many organizations, community leaders, and individuals.

Civil defense developments and accomplishments during fiscal year 1967, described in the body of this report, show that the program is sound, that it has come a long way, and that the base exists on which to continue to build in the future. Progress has continued during fiscal year 1967, and the national civil defense program, at its present state of development, provides a significant capability to save lives.

Highlights on the development of the nationwide fallout shelter system at the end of fiscal year 1967 included the following:

1. Public fallout shelter space for 10.6 million additional persons was located in over 9,650 facilities, increasing the national inventory to more than 160.2 million fallout shelter spaces in 175,496 facilities.
2. There were 7,436 facilities licensed. This increased the number of licensed facilities to 100,468, with aggregate shelter space for almost 99 million persons.
3. Approximately 5,600 facilities were marked. This increased the number of facilities marked to 101,018, with a total capacity to protect more than 92 million persons.

4. Survival supplies issued to 8,375 facilities increased the total number of facilities stocked to 83,042. These have the capacity and sufficient supplies to accommodate 78.4 million persons for 8 days, or 47.1 million for 14 days.

Other highlights were:

1. Community Shelter Planning (CSP) contracts were executed to cover 157 large planning areas in 49 States; contracts were negotiated with 45 States to enable them to provide planning assistance and guidance to smaller communities in the development of their CSP.
2. Home Fallout Protection Surveys in the States of Rhode Island, Minnesota, Maine, Utah, Nebraska, Iowa, Kansas, West Virginia, and Colorado had a 78-percent response from the homeowners receiving mail questionnaires, and resulted in the identification of 335,000 additional shelter spaces with a Pf of 40 or higher and 8.2 million spaces in the Pf 20-39 category.
3. Architectural and engineering design—"slanting"—to incorporate shelter in new buildings, and the distribution of packaged ventilation kits were among the shelter development techniques used to increase available shelter space.
4. Nearly 2,900 architects and engineers completed the *Fallout Shelter Analysis* course, bringing the grand total of fallout shelter analysts to more than 13,500. Architectural and engineering development centers were operated at eight universities.
5. The National Warning System (NAWAS) was strengthened by increasing the number of warning points from 761 to 893; also, using matching funds, NAWAS extensions were added at 22 locations important to local civil defense organizations.
6. The Civil Defense Telephone and Teletype System (NACOM 1) was improved by installing, in seven OCD regional offices, facsimile equipment which permits transmission of pictorial and typewritten material.
7. The Civil Defense Radio System (NACOM 2), serving as a backup system to NACOM 1, was extended to two additional States, making it operational in 39 States as well as in the District of Columbia, Puerto Rico, and the Canal Zone.
8. Of 2,714 broadcasting stations in the Emergency Broadcast System, 628 selected radio stations participated with OCD in a fallout protection program to insure operational capability in emergencies. A total of 485 radio stations had completed construction for fallout protection by yearend.
9. Approximately 35,000 amateur radio operators participated in the Radio Amateur Civil Emergency Services (RACES) program and operated 12,303 authorized stations.
10. The nationwide radiological monitoring network was strengthened by a net gain of 5,081 monitoring stations, increasing the grand

total to 63,143. Shelter radiological monitoring capability was strengthened by placing monitoring equipment in 6,764 additional public fallout shelters, making a total of 84,131 so equipped.

11. A total of 2,858 EOC's had been established by yearend. This total included 196 additional State and local centers financed, during fiscal year 1967, with Federal matching funds.

12. The damage assessment system was strengthened by updating and expanding stored data to include additional information on resources essential for survival.

13. In addition to the 50 States, more than 4,200 local governments, covering about 86 percent of the national population, submitted annual program papers and related semiannual progress reports in fiscal year 1967.

14. The net gain of key civil defense personnel and instructors trained at OCD Staff College was 2,842, making a total of 51,046 so trained at OCD schools since fiscal year 1960. A total of 55,106 State and local civil defense personnel received training through the Civil Defense University Extension Program (CDUEP), making a cumulative total of 189,112 participants since the CDUEP was started in fiscal year 1963.

15. During fiscal year 1967, the number of radiological monitors trained by the Army (CONARC), in the CDUEP, and through the Civil Defense Adult Education Program (CDAEP) totaled 37,829. In addition, 2,892 instructors were trained.

16. Shelter managers trained in fiscal year 1967 totaled 11,888, and included 2,867 instructors.

17. In public education, 419,806 persons were trained in *Personal and Family Survival*, and 6,899 teachers were trained and certified to teach the course. This brought the total number of graduates, including teachers, to approximately 2 million. More than 2.9 million persons were trained in *medical self-help*, making a cumulative total of about 5.9 million so trained.

18. Rural civil defense information was presented on more than 10,000 television and radio broadcasts, in more than 3,600 county and State fair exhibits, in over 9,700 articles released to newspapers, and in over 2,700,000 copies of publications distributed, by request, in rural areas.

19. Progress achieved in research activities included initiation of a comprehensive analysis of hypothetical attack effects and the effectiveness of civil defense countermeasures; addition of significant information that will lead to more effective use of the national fallout shelter system; initiation of a study to be conducted with a view to developing new and better radiological monitoring instruments, as well as improving those on hand; development and application of a computer program for fallout research to generate fallout histories; develop-

ment of an improved data base for estimating casualties expected from nuclear attack; and the development of a method for identification of critical skills, associating preattack employment patterns with post-attack recovery capabilities.

20. Public Information provided for dissemination of essential civil defense information in emergencies and explanatory information in peacetime.

21. Increased emphasis was placed on liaison and coordination with Federal officials and selected agencies, associations, and organizations by providing guidance to community organizations and local governments in support of civil defense.

22. Civil defense information was given to the public in many publications and periodicals, motion pictures, spot radio and television announcements, and by nationwide use of exhibits and posters.

23. Liaison with industry accelerated the distribution of civil defense information to industrial employees and helped expand the nationwide fallout shelter system in industrial facilities.

24. Labor support of the civil defense program was increased by continual liaison with the labor trade unions, principally through the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO).

PROGRAM STRUCTURE AND SUPPORT

The Civil Defense Program, throughout fiscal year 1967, continued within the framework established in fiscal year 1962.

Discussed separately in this report, the five major components of the civil defense program are:

First, a nationwide system of fallout shelters.—The basic concept of this system is to locate or develop sufficient fallout shelter space to accommodate the entire population, and to license¹ and mark public fallout shelters that meet certain minimum requirements, and stock them with survival supplies.

Second, complementary civil defense systems.—These systems, designed to make possible the effective use of shelters and the conduct of emergency recovery operations, include: (1) *A nationwide warning system* to alert people to impending attack and to direct them in seeking shelter; (2) *communications systems* to keep people informed and to direct emergency operations; (3) *nationwide monitoring and reporting systems* to collect, evaluate, and disseminate information on radioactive fallout; and (4) *a damage assessment system* to provide guidance for preattack planning and postattack operations.

Third, Federal assistance.—This assistance, designed to encourage all levels of government to develop and operate effective civil defense programs, includes policy and technical guidance, training and education, financial assistance, and surplus property donations.

Fourth, research.—Carefully organized research is conducted to provide perspective and develop guidance for all elements of the civil defense program.

Fifth, supporting activities.—These activities serve to inform the public of civil defense developments, to gain the active support of industry and national organizations, to maintain liaison with friendly nations, and to obtain guidance and recommendations from experts.

MAJOR EMPHASIS

Much of the fallout shelter space that will be needed to accommodate the total population at work, at home, or in school can be obtained by continuing to identify, mark, and stock fallout shelter space inherent

¹ Building owners are requested to sign licenses permitting use of their buildings for public fallout shelter in the event of emergency.

in existing structures and by making low-cost ventilation improvements. There is, nevertheless, a deficit of fallout shelter in some areas.

The residual shelter needs will have to be met by providing fallout shelter through new construction or by remodeling existing structures. Efforts during fiscal year 1967 were concentrated on exploiting fully the existing potential for fallout protection and determining more precisely the nature of the residual shelter requirements. This policy will be continued during fiscal year 1968. Principal aspects of the program designed to expand and improve the inventory of the nationwide fallout shelter system include:

1. Extension of the shelter survey program to include structures too small to qualify as public fallout shelters; i.e., small business facilities and one-, two-, and three-family dwellings.
2. Development of community shelter plans to insure effective use of available shelter space by matching people with specific shelter areas and to identify more precisely the residual shelter requirements.
3. Provision of advice and assistance to architects and engineers on the use of various design techniques to stimulate development of dual-purpose, low-cost fallout shelters in new construction and in major structural modification projects.

ORGANIZATION AND MANAGEMENT

Organization.—The Office of Civil Defense (OCD) is responsible for conducting the civil defense program at the Federal level. The Director of Civil Defense is in charge of the OCD and is directly responsible to the Secretary of the Army. The legal bases for this organization are departmental directives issued by the Secretary of Defense subsequent to Executive Order 10952 *Assigning Civil Defense Responsibilities to the Secretary of Defense and Others* effective August 1, 1961. From August 31, 1961, to March 31, 1964, the OCD was headed by the Assistant Secretary of Defense (Civil Defense). On March 31, 1964, civil defense functions and responsibilities delegated to the Secretary of Defense by Executive Order 10952 were assigned to the Secretary of the Army, who established the OCD within his office and delegated the functions to the Director of Civil Defense.

At the end of fiscal year 1967, the organizational structure was as shown in figure 1. The manpower authorization, as approved by Congress, was 849 permanent civilian positions. During calendar year 1966, a comprehensive personnel survey of the entire organization was conducted by a team of experts provided by the Office of the Secretary of the Army. Implementation of the personnel recommendations resulted in an extensive realignment of the agency structure during February 1967, including major adjustments in the staffing plan and

grade structure of the agency. By the end of the fiscal year the personnel situation was again stabilized.

Management.—During fiscal year 1967, the OCD used techniques described below in the management of major operational projects and programs including various parts of the OCD Management Information System. The primary objective of these systems is to provide current, accurate information on civil defense programs so that program managers can plan, monitor, and evaluate program progress. The output of the systems also provides top level management with processed information on which management decisions can be made.

Program Evaluation Review Techniques (PERT) were applied in conducting community shelter planning and home fallout protection surveys, and in procuring and distributing packaged ventilation kits.

The Contract Register provided an automated means for reporting contract management data on all OCD contracts. Improvements to the automatic data processing system and extension of its use were continued throughout fiscal year 1967.

The Integrated Management Information System (IMIS) computer-processed the fiscal year 1967 local program papers and progress reports, and furnished summarized information on planned and accomplished efforts in civil defense programs at local levels. Turn-around forms provided progress reports for each 6-month period during the year. National, regional, and State summaries were also available in output reports from this system.

The *Architects and Engineers Directory* was in constant use during the year. Periodic updating of the data file added information on new fallout shelter analysts as they completed training courses. *Overtime Analysis* provided quarterly reports on the use of overtime within OCD, furnishing top level management with current information on this area of concern during the year.

To provide data for efficient administration and to insure compliance with program requirements, audits were conducted at OCD headquarters and two OCD regional offices as well as in every State and more than 800 political subdivisions. The audits covered the matching funds financial assistance program administration procedures, including expenditures for State and local personnel and administrative expenses, supplies and equipment, and emergency operating centers programs. These audits produced recommendations for cost reduction in these areas amounting to over \$408,000 and resulted in improving the efficiency of program administration as well as clarifying policy decisions and operational procedures.

In addition, interim audits have been completed on 36 Radiological Maintenance Agreements and 11 Community Shelter Planning State Contracts, which have resulted in the clarification of the applicable cost principles and terms of the agreements.

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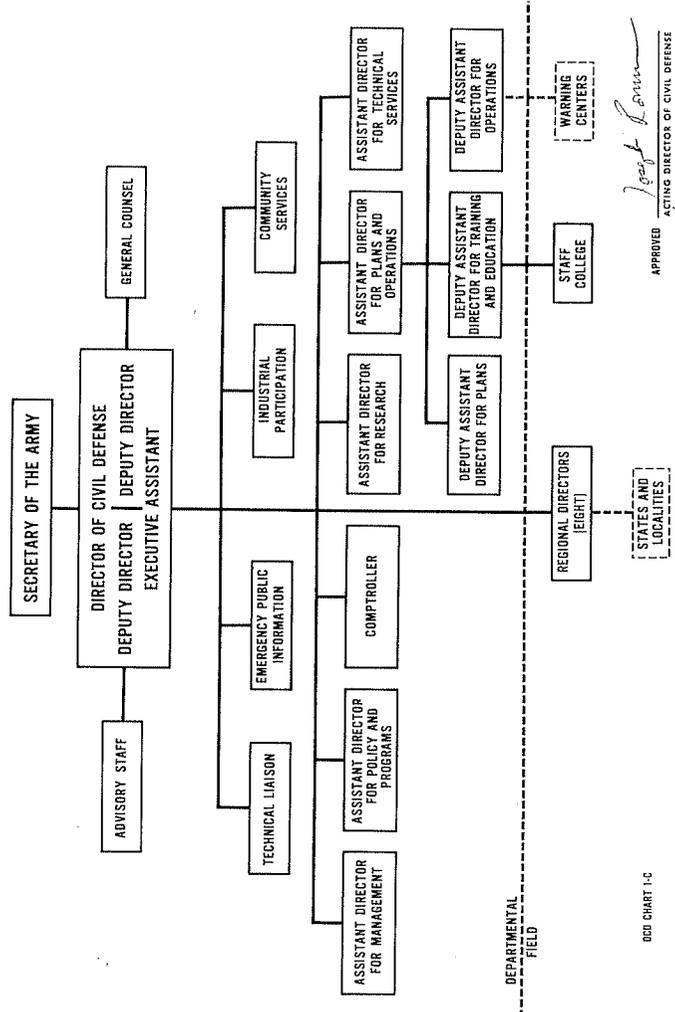


Figure 1.—OCD organization chart.

ODD CHART 1-C

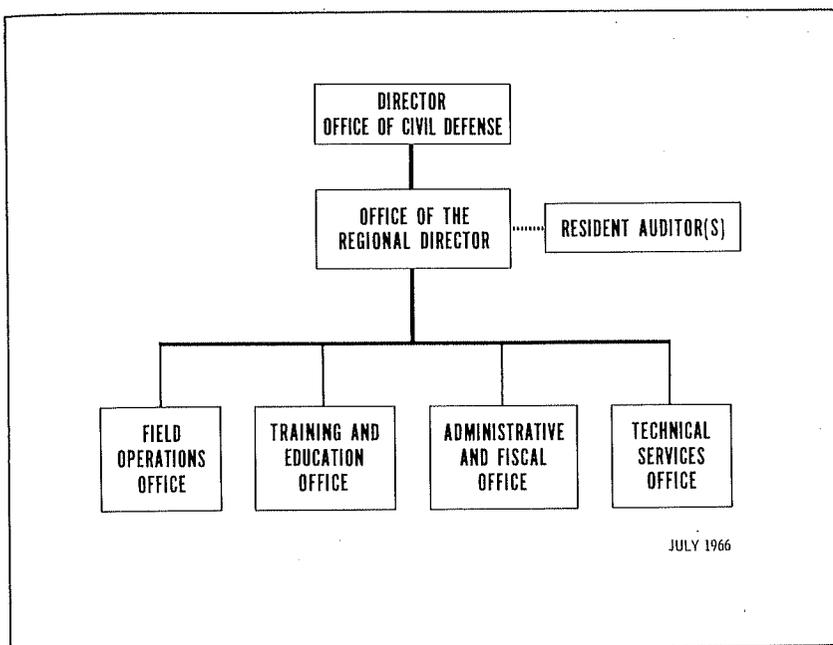


Figure 2.—OCD regional offices organization chart.

FEDERAL SUPPORT

The OCD continued to receive support from many Federal sources in developing and operating the civil defense program. Prominent in this support were the resources of the Department of Defense (DoD), including those of the Armed Forces, and the coordinated efforts of Federal civilian agencies.

Department of Defense Resources

Extensive use of DoD resources in nearly all OCD activities is evident throughout this report. Some of the major activities are described in this section.

The nationwide fallout shelter survey operations, which were principally of an updating nature during fiscal year 1967, were conducted for the OCD by the Army Corps of Engineers and the Naval Facilities Engineering Command. These agencies conducted nationwide updating surveys and made special surveys of small structures in community shelter planning areas in addition to assisting in conducting engineering case studies and training fallout shelter analysts. The Army Corps of Engineers, under reimbursable cross-servicing arrangements, operated the National Civil Defense Computer Facility.

Under OCD policy direction and control, the Defense Supply Agency managed OCD shelter supplies. With the exception of radio-

logical instruments, procured by the General Services Administration, this included all logistical operations involving shelter supplies, management of the OCD emergency engineering equipment, and the use of technical military capabilities for food container research and development of procurement specifications, when needed. The Civil Defense Materiel Division of the Defense Supply Agency, using Veterinary Corps inspectors, inspected all classes of civil defense shelter supplies under the Quality Check Program. The purpose of this program is to determine the condition of existing supplies and causes of deterioration, and obtain data for predicting storage stability and replacement requirements. The Military Traffic Management and Terminal Service of the Department of the Army determined routes, carriers, and transportation costs for shipping shelter supplies from one warehouse to another.

Under OCD policy control, the management, direction, technical operations, maintenance, and funding of civil defense communications systems, including the Civil Defense Telephone and Teletype System, the Civil Defense Radio System, and the National Warning System, were the responsibility of the U.S. Army Strategic Communications Command. The OCD warning centers relied upon the North American Air Defense Command for warning information.

Publications services, such as procuring printing and binding, distributing new publications, maintaining reserve stocks, and filling requisitions from State and local governments, were provided by The Adjutant General's Office, Department of the Army. This office also controlled the selection and assignment of Standby Reserve officers of all the military services to fill requests for assistance from civil defense officials of State and local governments.

Information and studies supporting the role of civil defense in national defense and required for OCD damage assessment and operational planning were furnished by the Joint Chiefs of Staff, the Defense Atomic Support Agency, the Weapons Systems Evaluation Group, and the National Military Command Systems Support Center.

Military training resources were provided for civil defense purposes. Subordinate commands of the U.S. Continental Army Command trained State and local personnel in radiological monitoring and explosive ordnance reconnaissance. The Army Pictorial Service developed and produced the scripts for training and educational films for OCD. The Army Military Police School, Fort Gordon, Ga., included civil defense material in courses offered to industrial managers and executives.

The Surgeon General of the Army contributed training in handling mass casualties for U.S. Army Reserve and National Guard personnel as well as for personnel of civil defense agencies.

The Department of the Air Force Civil Air Patrol continued to cooperate with the OCD in planning procedures for performing emergency air flight missions.

The Departments of the Army, Navy, and Air Force contribute equally with the Public Health Service in the funding of the Medical Education for National Defense (MEND) program of the Department of Health, Education, and Welfare and the Department of Defense. This interagency-sponsored program trains physicians in medical schools to cope with disaster conditions.

Civil defense guidance materials were distributed by industrial defense survey officers of the Continental Army Command, the Army Materiel Command, and the Corps of Engineers in connection with their surveys of certain industrial facilities important to the national defense. Recommendations made by the survey officers relating to their inspection of physical security and emergency preparedness measures at these facilities are consistent with guidance material issued by the OCD.

DoD agencies made surplus property available for civil defense use, and the Army Finance Office handled all payroll and disbursing services for the OCD.

Military Support

During fiscal year 1967, work continued on refining the program of using State Adjutants General and their staffs at State headquarters for planning the coordination and control of military forces to be used in support of civil defense. Policy direction and guidance for this military support is given in DoD Directive 3025.10 issued by the Secretary of Defense on March 29, 1965. Approved by the Secretary of the Army and the State Governors, the plan simplifies and makes more effective the coordination and control of military resources made available by all Services and DoD agencies to assist State governments in emergencies.

Each Adjutant General² works in close coordination with the State Civil Defense Director to insure that military support will be based on State and local civil defense plans; and, under the supervision of the CONUS Army Commander, he plans the employment of military resources to be made available by the area Service commanders.

The Commanding General, U.S. Continental Army Command (USCONARC), and the continental U.S. (CONUS) army commanders guide and control the State military headquarters in the performance of civil defense missions in the 48 contiguous States. In Alaska, Hawaii, and Puerto Rico, similar headquarters are controlled by the commanders of appropriate unified commands, and these commanders, as well as each CONUS army commander, maintain current listings

²In 11 States The Adjutant General is the Civil Defense Director.

of military forces in their areas of operation. The lists show, in order of priority, the degree of probable availability of these forces for support of the civil defense mission.

Manpower authorized to plan and conduct the military support mission totaled 263 at the end of fiscal year 1967: 15 military and 18 civilian personnel at USCONARC and CONUS Army headquarters; 2 military personnel and 1 civilian at the National Guard Bureau; and 227 civilian National Guard technicians at State headquarters.

The Army also continued to provide Reserve officers to assist the States in the planning phase of civil defense as well as in military support of civil defense. This was being accomplished by forming Reinforcement Training Units from members of the Ready Reserve Mobilization Reinforcement Pool to participate directly on a voluntary basis in civil defense planning and training activities and in military support planning.

The Services have on-post civil defense responsibilities. The U.S. Air Force, for example, undertook a fiscal year 1967 special program for training shelter management and radiological defense instructors for personnel at 35 Strategic Air Command Bases.

Federal Agency Coordination

The Office of Civil Defense coordinated the work of Federal agencies to insure that civil defense functions are carried out in accordance with major civil defense responsibilities assigned to the Secretary of Defense by Executive Order 10952, July 20, 1961. This coordination is achieved (1) within the framework of several other Executive orders assigning civil defense responsibilities and emergency preparedness functions to various Departments and Agencies and (2) through contractual arrangements with several Departments and Agencies. These arrangements permit OCD to use the special competence of Federal agencies in performing its functions in accordance with Executive Order 10952. Many of these activities are discussed in this report; e.g., conducting civil defense research, compiling damage assessment data, rural civil defense work done by the Department of Agriculture, and the Medical Self-Help and Civil Defense Adult Education Programs conducted for the OCD by the Department of Health, Education, and Welfare.

The OCD continued to work closely with the Office of Emergency Planning, as well as with other Federal agencies, in the development of postattack plans for the management of survival resources.

The Interagency Civil Defense Committee (see app. 3) continued to enhance the value of daily contacts and working relationships between personnel of Federal agencies pursuing related civil defense objectives. Established in fiscal year 1963, the Regional Civil Defense Coordinating Boards continued to coordinate civil defense planning of mili-

tary departments and Federal agencies with State and local civil defense operations.

STATE AND LOCAL PARTICIPATION

Development of operational capability at all levels of government in support of the many components of the National Civil Defense Program is a prime objective of the Office of Civil Defense. At the end of fiscal year 1967, this capability was supported by official civil defense organizations in the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands, and more than 4,200 local political subdivisions which had active civil defense programs that were documented by formal program papers submitted to and approved by OCD. Additional evidence of nationwide participation was the fact that about 74 percent of all counties and 93 percent of the larger cities had some stocked public fallout shelters.

State and local civil defense full- or part-time personnel paid with the help of Federal matching funds numbered 5,815 at fiscal yearend. State and local civil defense organizations are under the authority of elected officials and are an integral part of civil government. Many additional State and local government employees and volunteers have been trained under OCD guidance to carry out civil defense assignments in an emergency.

During fiscal year 1967, as in past years, the operational capabilities of many State and local civil defense organizations were tested in combating the effects of natural disasters. These included the Wisconsin floods during April; the Illinois, Michigan, and Indiana tornadoes of April 21; and the New Jersey, Pennsylvania, Delaware, and Maryland power failure, June 5. Actions that contributed to the low casualty and property loss and damage rate included (1) early warning and continuous reports issued by the U.S. Weather Bureau, (2) improved civil defense communications, and (3) prompt activation of emergency operations plans to protect life and property. (See app. 5.)

FINANCIAL SUMMARY

Funds available during fiscal year 1967 for carrying out civil defense operations totaled approximately \$141.5 million: \$101.1 million of new fiscal year 1967 appropriations, \$0.2 million in reimbursable orders from other agencies, \$39.2 million carried over into fiscal year 1967 from prior year appropriations, and \$1.0 million transferred from Civil Defense Procurement Fund to Operation and Maintenance, Civil Defense Appropriations. Of the total amount available, \$137.6 million was apportioned by the Bureau of the Budget for execution of the fiscal year 1967 program, making these funds available for obligation during fiscal year 1967; approximately \$3.9 million was reserved for carry-over and obligation in subsequent fiscal years.

Table 1 shows the planned application of the funds available for obligation in fiscal year 1967 and the actual obligations for specific budget activities. The Office of Civil Defense obligated \$118.5 million, or 86 percent, of the \$137.6 million available for obligation.

TABLE 1.—*Financial summary for fiscal year 1967*

[In thousands]

Budget activity	Funds available for obligation	Funds obligated
GRAND TOTAL.....	\$137, 567	\$118, 496
OPERATION AND MAINTENANCE, TOTAL.....	67, 249	66, 560
Warning and detection.....	6, 203	6, 077
Warning systems.....	842	800
Detection and monitoring systems.....	754	700
Warehousing and maintenance.....	4, 607	4, 577
Emergency operations.....	21, 013	20, 635
Training and education.....	12, 749	12, 712
Emergency operations systems development.....	1, 896	1, 877
Emergency information.....	1, 909	1, 865
Damage assessment.....	1, 476	1, 426
Broadcast station protection program.....	1, 366	1, 157
Other emergency operations activities.....	1, 617	1, 598
Financial assistance to States.....	28, 339	28, 260
Personnel and administrative expenses.....	17, 430	17, 376
Survival supplies, equipment and training.....	4, 934	4, 913
Emergency operating centers.....	5, 975	5, 971
Management.....	11, 694	11, 588
RESEARCH, SHELTER SURVEY AND MARKING, TOTAL.....	68, 427	50, 144
Shelters.....	57, 111	39, 448
Shelter survey and marking.....	31, 905	26, 027
Shelter provisions.....	191	0
Warehousing and transportation.....	5, 117	2, 188
Federal regional emergency operating centers.....	7, 800	1, 766
Shelter development.....	11, 718	9, 135
Improvement of shelters.....	380	332
Research and development.....	11, 316	10, 696
CONSTRUCTION OF FACILITIES, TOTAL.....	1, 891	1, 792



Part III

NATIONWIDE FALLOUT SHELTER SYSTEM

Civil defense emphasis during fiscal year 1967 was on the development of a nationwide fallout shelter system through dual-purpose use of available shelter resources, public and private. This included promoting the design of improved fallout shielding features in new structures; locating with precision the fallout protection inherent in the construction of tens of thousands of existing structures, from skyscrapers to private dwellings; and making information on public fallout shelter available to all citizens.

This part of the report describes operational progress during fiscal year 1967 toward attaining these objectives.

OPERATIONAL GAINS

Public fallout shelter space for over 10.6 million additional persons was located during fiscal year 1967, increasing the national inventory of surveyed space to more than 160 million. Operational gains were also made in marking and stocking public fallout shelters. At the end of the fiscal year, space had been licensed for 98.7 million persons; marked for 92.7 million; and stocked with survival supplies that would be sufficient to take care of 47.1 million persons for 14 days, or 78.4 million for 8 days.

A summary of fiscal year 1967 progress is given in table 2.

TABLE 2.—*Summary of progress in public fallout shelter program, fiscal year 1967*

Program action	Number of facilities (in thousands)				Number of spaces (in millions)			
	End of fiscal year 1966 Total	End of fiscal year 1967 Total	During fiscal year 1967		End of fiscal year 1966 Total	End of fiscal year 1967 Total	During fiscal year 1967	
			Gain	Percent gain			Gain	Percent gain
Located.....	165.8	175.5	9.7	6	149.6	160.2	10.6	7
Licensed.....	93.0	100.5	7.4	8	89.3	98.7	9.4	11
Marked.....	95.4	101.0	5.6	6	85.3	92.7	7.4	9
Stocked.....	74.7	83.0	8.4	11	41.3	47.1	5.8	14
Rated capacity of facilities stocked.....					68.8	78.4	9.6	14

These accomplishments indicated progress in a major program started in September 1961. All studies and analyses of possible nuclear attack patterns on the United States demonstrate that the fallout shelters can save more lives than any other feasible protective measure, and that the number of persons saved would decrease only slightly as the number and yield of weapons increased. The program includes (1) a continuing nationwide survey to locate public fallout shelter space in existing structures, (2) the marking and licensing of acceptable shelter space for public use, and (3) the stocking of licensed shelters with survival supplies. Succeeding sections of this report present the status of these operations.

Survey Operations

Generally, public fallout shelters in this program fall into 2 categories: (1) those which contain space for at least 50 persons and have a minimum protection factor (Pf) of 40; and (2) those with space for 10 to 50 persons and with Pf of 40. Pf expresses the relation between the amounts of radiation that would be received by an unprotected person and a person inside the shelter. Thus, an unprotected person would receive 40 times more radiation than the person inside a shelter with a Pf of 40.

Shelter survey operations in fiscal year 1967 were principally of an updating nature. These operations increased the nationwide shelter inventory by more than 9,650 facilities, which increased the grand total to 175,496, with an aggregate capacity for about 160.2 million persons. (See tables 2 and 3.)

There is a significant amount of shelter from fallout inherent in large structures, but it isn't always well located with respect to population distribution. To help locate additional shelter in areas where deficits exist, the Office of Civil Defense Small Structures Survey was begun in fiscal year 1966. This continuing survey, now a part of the National Fallout Shelter Survey, covers structures that have space for at least 10, but less than 50 persons. These structures are generally smaller office and business buildings, apartment buildings, shopping centers, theaters, and schools and include small structures incidentally surveyed during surveys for community shelters. Approximately 2.3 million additional spaces are available in this category of shelters.

Other sources of additional shelter space derived from the updating operations included new or modified construction and structures previously omitted from the survey because they were estimated to have marginal capacities or protection factors.

Updating operations also produced a considerable amount of data on making more effective use of shelter under emergency conditions. For example, a record was made of (1) availability of trapped water

TABLE 3.-FALLOUT SHELTER LOCATED, LICENSED, MARKED, AND STOCKED FISCAL YEAR (FY) 1967^{1/}

(Protection factor of 40 or higher, 50 or more spaces per facility)

AREA	L O C A T E D				L I C E N S E D				M A R K E D				S T O C K E D (with general supplies)					
	Facilities		Spaces (000) ^{2/}		Facilities		Spaces (000) ^{2/}		Facilities		Spaces (000) ^{2/}		Facilities		Spaces (000) ^{2/}			
	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	During FY 1967	Cumulative, end of FY 1967	Rated capacity, end of FY 1967	Stocked capacity, end of FY 1967		
TOTAL.....	9,657	175,496	10,613	160,237	7,436	100,468	9,429	98,697	5,599	101,018	7,378	92,664	8,375	83,042	9,642	78,424	5,772	47,066
REGION ONE.....	1,412	63,001	1,282	51,109	2,459	31,946	2,311	28,496	1,214	37,280	1,336	29,427	3,122	25,947	2,945	21,642	2,136	12,981
Connecticut.....	-36	2,878	-27	2,193	30	1,877	6	1,638	0	1,530	-8	1,286	71	1,654	46	1,280	64	964
Maine.....	269	918	148	459	106	545	92	347	198	589	110	345	78	442	80	275	65	222
Massachusetts.....	398	7,021	387	5,464	260	3,660	285	2,917	476	3,540	372	2,833	135	2,545	205	2,087	111	1,304
New Hampshire.....	106	566	64	272	28	323	18	162	39	299	23	149	10	293	13	152	0	121
New Jersey.....	46	7,924	67	6,285	93	3,997	114	3,662	11	4,129	37	3,748	279	2,940	246	2,909	165	1,507
New York.....	39	40,696	158	34,502	1,625	19,705	1,539	18,571	429	25,731	667	20,108	2,338	16,775	2,176	14,065	1,650	8,308
Rhode Island.....	378	1,066	230	807	166	674	170	587	37	378	101	407	81	457	103	457	31	250
Vermont.....	31	354	28	166	10	263	15	130	33	263	17	134	20	256	16	129	3	89
Puerto Rico.....	181	1,563	226	959	141	889	76	482	-9	808	15	414	110	572	63	287	46	213
Virgin Islands.....	0	15	0	2	0	13	0	2	0	13	0	2	0	13	0	2	0	2
REGION TWO.....	3,400	35,575	3,481	33,064	1,411	19,545	2,196	20,430	1,297	19,187	1,653	19,269	1,628	15,412	1,972	16,497	713	8,171
Delaware.....	61	684	148	480	27	447	113	384	16	341	75	319	45	431	110	318	21	122
Dist. of Columbia.....	1,124	4,151	1,203	5,027	132	1,263	623	3,067	101	1,208	566	2,914	75	1,133	576	2,753	44	675
Kentucky.....	-9	1,669	128	2,119	61	1,118	251	1,464	7	1,166	121	1,440	58	1,005	212	1,233	94	929
Maryland.....	184	2,578	104	2,287	186	1,700	169	1,700	169	1,654	144	1,450	162	1,519	142	1,339	72	800
Ohio.....	207	7,375	314	6,584	159	4,339	101	3,502	139	4,849	70	3,729	264	3,253	175	2,596	119	1,729
Pennsylvania.....	1,169	14,079	1,166	12,878	682	7,987	801	8,088	717	7,177	537	6,083	870	6,182	647	6,519	303	2,875
Virginia.....	622	4,125	402	3,150	152	1,914	124	1,851	144	2,123	137	1,943	133	1,375	102	1,439	51	766
West Virginia.....	42	914	15	539	12	602	14	374	4	669	3	393	21	514	9	301	9	275
REGION THREE.....	824	11,747	1,050	12,110	835	8,328	1,032	8,626	533	7,394	610	7,698	762	7,170	617	7,162	452	5,006
Alabama.....	46	1,892	35	1,354	58	1,401	57	1,039	107	1,356	79	970	77	1,259	36	967	34	776
Florida.....	97	1,958	129	2,623	77	1,173	137	1,663	201	1,115	233	1,584	86	965	69	1,313	45	818
Georgia.....	335	2,286	504	3,416	272	1,708	434	2,653	60	1,302	104	2,164	230	1,392	239	2,088	143	1,113
Mississippi.....	47	587	12	392	41	497	19	356	48	512	24	360	23	440	17	341	17	339
North Carolina.....	191	2,146	227	1,690	194	1,561	151	1,279	42	1,086	65	883	178	1,352	130	1,075	119	819
South Carolina.....	91	787	69	607	94	557	59	430	12	489	15	372	45	425	39	330	29	259
Tennessee.....	17	1,893	72	1,955	99	1,353	174	1,156	63	1,460	92	1,317	123	1,259	86	998	52	830
Canal Zone.....	0	198	0	71	0	78	0	49	0	74	0	49	0	78	0	49	14	52
REGION FOUR.....	1,308	24,002	1,665	24,646	861	14,735	1,274	15,029	994	13,833	1,314	13,254	1,120	12,933	1,489	11,235	962	7,227
Illinois.....	435	8,244	100	10,258	191	4,596	246	5,614	35	4,101	-15	4,609	407	3,618	414	3,038	293	1,940
Indiana.....	57	2,820	216	2,885	86	1,694	152	1,530	-26	1,760	33	1,397	111	1,530	149	1,332	125	1,075
Michigan.....	168	4,942	590	5,569	182	2,967	373	3,460	218	2,871	438	3,270	205	2,604	400	2,972	152	1,415
Minnesota.....	259	3,672	432	3,331	178	2,633	337	2,520	389	2,554	616	2,267	205	2,565	363	2,180	200	1,469
Wisconsin.....	389	4,324	329	3,104	224	2,845	165	1,905	378	2,547	240	1,709	192	2,616	163	1,713	190	1,327
REGION FIVE.....	579	8,696	1,006	9,697	320	6,472	815	7,035	254	6,135	664	6,354	363	5,710	939	6,095	559	4,059
Arkansas.....	49	1,481	49	871	14	1,194	19	698	14	1,178	39	715	9	1,096	6	636	5	415
Louisiana.....	44	926	83	1,320	23	642	32	832	0	687	20	915	33	540	49	710	37	474
New Mexico.....	39	564	41	347	26	476	21	285	12	434	30	261	49	462	69	277	105	265
Oklahoma.....	31	1,516	32	1,291	15	1,288	46	1,078	73	1,309	76	1,096	46	1,293	89	1,031	111	871
Texas.....	416	4,209	803	5,869	242	2,872	696	4,141	155	2,527	500	3,368	226	2,319	726	3,442	301	2,034
REGION SIX.....	1,338	16,447	983	11,473	909	10,233	691	7,347	648	9,494	584	6,982	619	7,864	511	6,186	298	3,891
Colorado.....	191	1,843	131	1,616	170	1,186	123	1,062	182	1,028	140	832	73	942	92	929	70	740
Iowa.....	25	2,237	21	1,304	142	1,651	86	1,949	83	1,753	50	1,035	115	1,330	36	748	32	561
Kansas.....	108	2,825	68	1,725	118	1,844	72	1,291	123	1,960	80	1,338	129	1,466	52	1,106	49	669
Missouri.....	143	4,290	304	4,661	52	2,114	142	2,570	32	1,951	152	2,510	76	1,581	162	2,182	42	974
Nebraska.....	311	3,059	198	1,172	134	1,849	137	743	45	1,678	58	653	120	1,270	91	595	47	412
North Dakota.....	318	909	148	406	110	568	46	271	22	374	26	217	36	447	29	233	30	206
South Dakota.....	158	824	70	370	88	656	45	300	58	439	31	241	54	561	37	274	15	220
Wyoming.....	84	460	43	219	95	365	40	161	103	311	48	156	16	267	11	118	12	108
REGION SEVEN.....	478	10,893	850	14,005	425	5,488	873	8,696	361	4,415	936	6,929	454	4,635	856	6,976	426	3,695
Arizona.....	24	579	11	527	43	355	44	331	44	274	37	233	41	316	15	257	26	229
California.....	369	7,520	755	12,084	272	3,917	749	7,524	273	3,149	854	6,045	354	3,263	790	6,031	372	2,951
Hawaii.....	2	483	2	344	22	279	34	240	13	217	21	181	8	211	26	196	1	97
Nevada.....	39	306	32	258	58	234	33	198	-1	133	9	121	38	200	20	168	17	156
Utah.....	43	1,982	50	784	30	698	15	403	34	641	17	350	13	641	4	322	9	261
American Samoa.....	0	2	0	3/	0	1	0	3/	0	1	0	3/	0	0	0	0	0	0
Guam.....	1	21	0	8	0	4	0	1	0	0	0	0	0	4	0	1	0	1
REGION EIGHT.....	318	5,135	296	4,133	216	3,721	237	3,038	298	3,280	281	2,751	307	3,371	314	2,632	228	2,037
Alaska.....	4	256	28	141	-1	181	26	112	2	168	33	105	9	191	28	113	10	88
Idaho.....	68	465	44	228	14	345	13	164	24	489	35	153	28	340	21	166	24	158
Montana.....	46	708	45	378	64	574	38	301	52	697	66	243	72	565	47	305	69	274
Oregon.....	41	1,413	49	1,252	23	872	31	822	83	1,609	125	749	56	660	43	487	32	424

for use by shelter occupants and cost estimates on the installation of wells, if needed and feasible as a source of water, (2) the amount of food in the building that normally would be available to the shelter occupants, (3) the number of sanitation kits and radiological defense kits needed for individual shelters, (4) the capacity of sewage facilities available to shelters, and (5) the number of telephone connections available for emergency communication with shelter occupants. These data are needed to help local governments plan for the effective use of shelters under emergency conditions, and they can assist in alleviating storage problems by permitting a reduction in the number of water drums and other shelter supplies that need to be stocked.

Updating operations were concentrated in active community shelter planning areas during the fiscal year. Special shelter surveys and other techniques were also used to help locate additional shelter space, where needed. Results of survey operations were made available to State and local planning officials to help them provide fallout protection for the people in each locality.

Licensing and Marking Operations

Licensing.—Before stocking public fallout shelters with survival supplies, the OCD requires that property owners and the local government officials sign a *Fallout Shelter License or Privilege* form. During fiscal year 1967, licenses were signed for 7,436 facilities with an aggregate capacity for more than 9.4 million persons. This increased the grand total to 100,468 licensed facilities, with an aggregate capacity for 98.7 million persons. (See tables 2 and 3.)

Local governments are responsible for obtaining these licenses, but upon request of local civil defense officials, survey personnel continued to perform this task during fiscal year 1967. No monetary payment is made to or by the owner of the shelter facility, and he may revoke the license by sending a 90-day notice by registered mail to his local government as well as to the Federal Government.

The license authorizes temporary access by the public to specified shelter space in emergencies in the period immediately before, as well as during and after an attack. It also authorizes placement and maintenance of shelter signs, storage of shelter provisions in the facility, and inspection of them by Federal and local government officials. In addition, the license makes the local government responsible for care and maintenance of the shelter provisions, and except for willful damage or bad faith, exempts the owner from these responsibilities.

Marking.—The OCD continued to furnish standard fallout shelter signs for the interior and exterior marking of public fallout shelters meeting the minimum requirements. Posting these signs is primarily the responsibility of State and local governments. But upon request of local governments, shelter survey personnel continued to assist in per-

forming this work and, when practicable, also helped in shelter sign maintenance when facilities were revisited for survey updating.

Approximately 5,600 facilities, with an aggregate capacity for 7.4 million persons, were marked with standard fallout shelter signs during fiscal year 1967. About 43,000 shelter signs were posted during fiscal year 1967, making an approximate total of 163,000 exterior and 554,000 interior signs in use. This increased the grand total to 101,018 marked facilities, with an aggregate capacity for 92.7 million persons. (See tables 2 and 3.)

Stocking Operations

Survival supplies were issued to 8,375 shelter facilities during fiscal year 1967, increasing the grand total of stocked facilities to 83,042. The survival supplies issued during the fiscal year would be sufficient to take care of more than 9.6 million persons for 8 days, or about 5.8 million for 14 days. At the end of the fiscal year, the cumulative quantity of survival supplies placed in facilities would be sufficient to take care of their rated capacity of 78.4 million persons for 8 days, or 47.1 million for 14 days. In addition, 6,764 shelters were furnished with at least one radiation detection and monitoring kit, increasing the total number so equipped to 84,131.

An OCD objective is to assure that survival supplies available to each licensed public fallout shelter would be sufficient to take care of shelter occupants for a 14-day period. The number of shelter occupants in each case is the rated capacity of the shelter; i.e., the number of persons for whom a shelter is capable of providing protected space, as determined by the survey. Shelter occupants in many places would have access to water, food, and medical supplies normally available in buildings where shelters are located. These and other survival assets, such as sewage facilities, are important in determining the amount and kind of supplies issued to each shelter.

Many public fallout shelters have been stocked for 100 percent of their rated shelter occupant capacity. Shelter spaces stocked with federally procured supplies during fiscal year 1967 averaged 59 percent of the rated capacity of the facilities stocked.

The survival supplies placed in licensed public fallout shelters are food, sanitation, and medical supplies, water storage containers, and radiation detection equipment. These supplies, described in appendix 1, were developed and procured by the Federal Government. An important specification was that they remain usable after long periods of storage. They are adequate to take care of normally healthy persons while in shelters and to enable them to resume productive activities upon emergence.

Ventilation equipment in the form of a packaged ventilation kit was procured in limited quantity for the first time during fiscal year

1966, and became available for experimental placement in selected shelter facilities during fiscal year 1967. (See app. 1.)

Status of operations.—Food, sanitation kits, and medical kits procured and delivered to Federal warehouses since the inception of the program, in fiscal year 1962, would be sufficient to take care of 63 million shelter occupants for 2 weeks; water containers were procured for only 50 million, since trapped water is available in many shelters for emergency use. No additional procurement of general shelter supplies was initiated during fiscal years 1965, 1966, and 1967, pending distribution of stocks procured. About 9 percent of these supplies were placed in shelters during fiscal year 1967; 66 percent were placed in shelters in prior years, and, at the end of fiscal year 1967, the remaining 25 percent, for use in filling requisitions, were at warehouses. (See fig. 4.) Radiological kits were also procured and had been furnished to 84,131 shelters by yearend. During fiscal year 1967, the average cost to the Federal Government of shelter stocking, including associated warehousing and transportation, continued to be approximately \$2.43 per shelter space.

By fiscal yearend, 1,462 ventilation kits had been issued for placement in shelters. In addition, 159 had been issued for nonshelter uses, such as service testing and evaluation, training, and shelter occupancy studies. The remaining 779 ventilation kits were at Federal distribution points and will be issued upon receipt of delivery instructions from local civil defense organizations participating in this pilot program. (See app. 1.) Ventilation kits placed in inadequately ventilated public shelters during fiscal year 1967 increased the shelter occupant capacity of shelters by 132,000 spaces.

Civil Defense Quality Check Program.—By the end of fiscal year

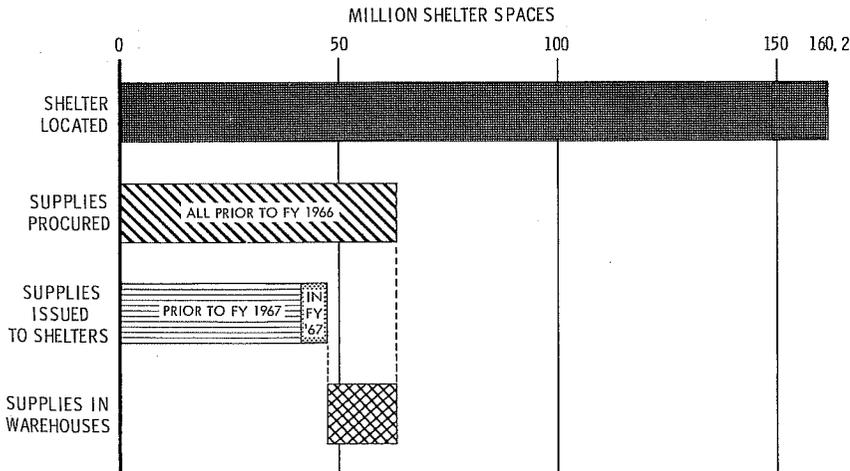


Figure 4.—Summary of shelter stocking operations, end of fiscal year 1967.

1967, plans were completed to implement a Civil Defense Quality Check Program under a 4-phase schedule of execution. The purpose of this program is to inspect fallout shelter supplies on a scientific sampling basis and obtain data relative to the serviceability of these supplies, and their operational readiness.

The inspection concepts and proposed inspection and reporting procedures were subjected to evaluation under field conditions (Phase 1) before being published and distributed in the field. A series of training seminars for personnel of the Veterinary Services, who will conduct the inspections, was held by the Defense Supply Agency, which is responsible for the program. Inspections were scheduled and begun at military installations (Phase 2). (See fig. 5.) After completion of Phase 2 during the early part of fiscal year 1968, inspections will be conducted in Federal buildings (Phase 3), and then in civilian owned facilities (Phase 4).

Preliminary findings from inspections conducted during the year indicate that the general condition of the supplies is satisfactory. Limited laboratory testing of certain medical supplies was performed.

A program was initiated to procure and issue special protective devices for supplies to be stored in mines, caves, and tunnels where storage conditions are less favorable due to humidity, moisture, and dust. In fiscal year 1968, the protective devices will be issued to special facilities where additional protection is required to insure continued serviceability of supplies.

Protective devices to be furnished consist of:

1. A highly water-resistant fiberboard container for each large medical kit.
2. Protective bags made of polyethylene film to be used to protect each sanitation kit, each water container, each small medical kit, and each Radef kit.
3. Bulk polyethylene film, in rolls, to be used to cover all supplies in shelters stocking supplies for 1,000 or more spaces.
4. Special pallets to provide a firm stacking platform and to keep supplies from direct contact with the facility floor surface.

Distribution of the protective devices will be made from warehouses at Metuchen, N.J.; Memphis, Tenn.; LaPorte, Ind.; Kansas City, Mo.; Sacramento, Calif.; and Seattle, Wash.

Operational procedures.—During fiscal year 1967, supply operations were limited primarily to the distribution of supplies from warehouses to public fallout shelters. All supplies were distributed through Department of Defense (DoD) and General Services Administration (GSA) warehouse facilities. The Defense General Supply Center (DGSC) at Richmond, Va., a field facility of the DSA, continued as the national inventory control point for the distribution of shelter supplies.

By the end of the fiscal year, 17 DoD and 14 GSA warehouses were serving as distribution points to local governments. During the year, the stocks of supplies at 11 warehouses were substantially reduced, and the civil defense supply activities were discontinued after their geographic area missions had been reassigned to other warehouses. Two other warehouses were released to take care of military requirements.

These reassignments reduced future warehousing costs, but the potential savings are offset by an increase in the number of civil defense organizations that must be furnished supplies for shelter stocking at Federal expense. The Federal Government pays for transportation of supplies to local central delivery points, or to shelters being stocked for more than 1,000 persons, if more than 50 percent of the population of the county are more than 25 air-miles from the warehouse. If lesser distances are involved, local governments provide transportation for pickup and delivery of shelter supplies. Local governments are responsible for placing the supplies in shelters and for future care, inspection, and maintenance of these supplies.

According to available data, shelter supplies placed in public fallout shelters remain relatively secure. At the end of the fiscal year, requisitions for and issuance of replacements for losses amounted to less than two-tenths of one percent of the total of all shelter supplies issued since the beginning of the program in fiscal year 1962. This included replacements necessitated by losses from theft, fire, natural disaster, and all other causes. Reported losses caused by theft and vandalism amounted to only three-hundredths of 1 percent.

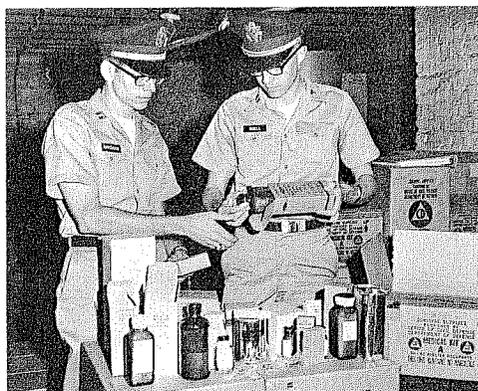
The series of actions that result in actual stocking of a specific shelter begins when the owner and local government official sign the shelter license agreement. Based upon this shelter license data, a preprinted requisition for shelter supplies is sent by the DGSC to the local government. When local officials sign and return the requisition, the DGSC sends a shipping document to the appropriate warehouse and the local government. The supplies are then issued by the warehouse as soon as practicable.

COMMUNITY SHELTER PLANNING

The OCD Community Shelter Planning (CSP) Program, started in mid-fiscal year 1966, made considerable progress in fiscal year 1967. CSP studies conducted in 57 representative communities throughout the Nation and in 16 CSP projects developed by OCD regional offices provided the basis for the CSP guidance which is set forth in part D, chapter 3, and appendixes of the Federal Civil Defense Guide (FCDG). The purpose of this program, which is the foundation of local emergency readiness, is to develop practical procedures in each jurisdiction to make efficient use of the best available fallout protection



a. Food taken at random from stockpile.



c. Medical supplies checked for breakage, deterioration, expiration dates, and general condition.



e. Captain in charge of inspection team and sergeant in charge of supplies discussing defects found and corrective action to be taken.

Figure 5.—Quality check inspection of fallout



b. Tins of crackers examined for damage which might have spoiled vacuum-sealed contents.



d. Radiation detection instruments tested for reliability and operational readiness, using tiny radiation "source" built into side of Geiger counter held by sergeant.



f. Captain conducting another exit interview with sergeant.

shelter supplies at a military installation.

in the event of attack, inform each citizen, and prepare each department of local government to support the plan and meet its expanded responsibilities in time of major disaster.

If an attack were to occur in the near future, the shelter already marked could save many lives, provided people in or near buildings affording shelter were aware that shelter signs identify protected areas. The Community Shelter Plan enables a local government to give people information that answers the questions "Where do I go?" and "What do I do?" in case of nuclear attack. The plan does this by designating specific public shelters to be used by people located in specific areas of the community, thus insuring the best use of the best existing protected space. This information is normally set forth on maps, and allocation plans are updated as new shelter space is identified or created and as population patterns change. The CSP includes information for those people for whom public shelter is not now available; for example, instructions on how to improve the protection existing in homes, including action which can be taken to do this in a crisis period. (See fig. 6.)

The CSP leads to the application of funds and effort where they are needed in programs to identify shelter in small structures, to provide ventilation kits to increase space usable in shelters already identified, and to give professional advice on the use of newly developed techniques to incorporate shelter at little or no cost in the design of new buildings.

The Federal Government makes funds available to obtain the services of a qualified planner, who serves as a State CSP officer (CSPOS). He provides technical assistance to local non-urban governments in developing community shelter plans. In the larger communities, OCD, through the U.S. Army Corps of Engineers, contracts with local governments or their local planning agencies for the development of community shelter plans. Smaller communities, where shelter allocation and movement to shelter are relatively uncomplicated, receive only assistance from the CSPOS to complete shelter plans.

For larger community areas, the cumulative goal through fiscal year 1967 was placement of contracts with 171 areas for the preparation of plans for the use of local urban planners or professional urban planning firms. By fiscal yearend, 164 contract proposals had been submitted for processing, and 157 of these community areas had executed contracts. The contracts placed by the end of the fiscal year provided for development of emergency shelter use plans for about 40 million people living in 206 counties throughout the United States.

For assistance in CSP development in smaller community areas, contract proposals for establishment of State level professional urban planning services had been received from 49 States and the District

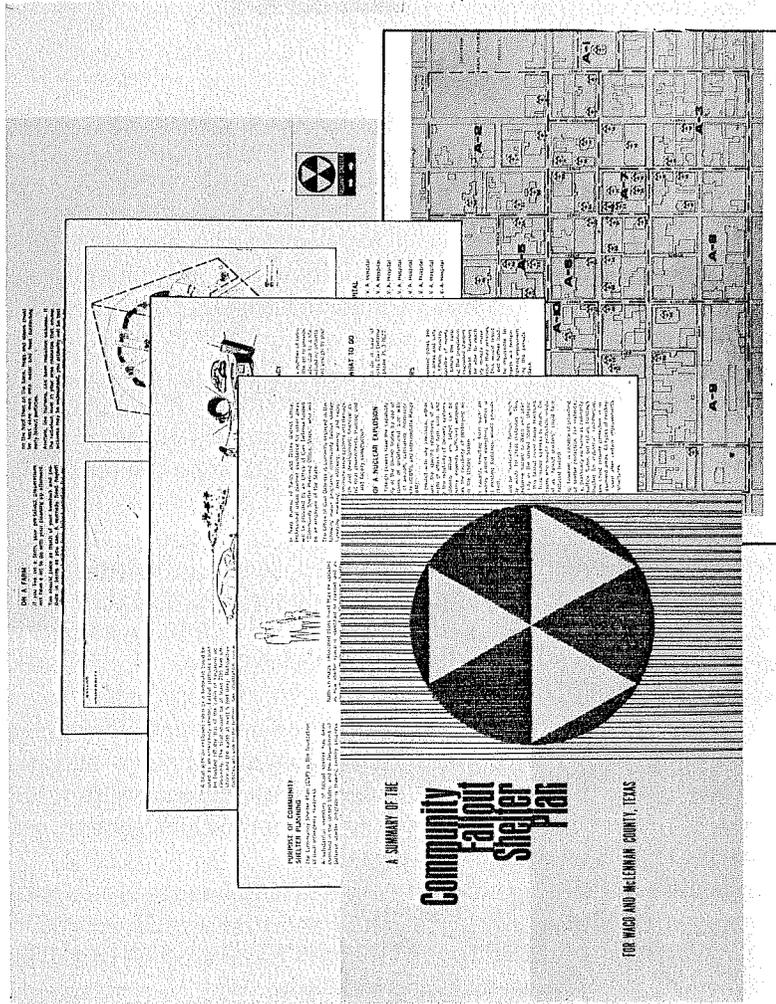


Figure 6.—Community Shelter Planning information.

of Columbia, and 45 State CSPOS contracts had been executed by the fiscal yearend. The State of Rhode Island is covered by a larger community area contract and is not included in this category. With this State level assistance, a total of 194 smaller counties with a population of 4.2 million people had started development of shelter use plans by yearend.

HOME FALLOUT PROTECTION SURVEY

After active development and testing for several years, the home fallout protection survey was first deployed in Rhode Island in early 1966. Using Bureau of the Census techniques, the survey collects data from householders to identify and inventory the amount and quality of fallout protected space in home basements. The identification of fallout protection in homes is of significant value to the householder as well as to community shelter planners, as a shortage of acceptable public fallout shelter exists, particularly in residential areas, in many parts of the country. Technical aspects of the program were developed in close cooperation with the Subcommittee on Radiation Shielding of the Advisory Committee on Civil Defense, National Academy of Sciences.

Under OCD sponsorship, the Bureau of the Census accomplishes the survey by mailing a questionnaire to householders in one-, two-, and three-family homes. (See fig. 7.) These are filled out and returned to the Census Bureau for computation of protection factors in each home with a basement. Usually, places of less than 10,000 population, where addresses are not available, are covered by enumerators. The information on each home is confidential to the householder and the Census Bureau. For the majority of householders, the survey provides information for the first time on whether or not fallout shelter protection exists in the basements of their homes.

Every family responding whose home has a basement is mailed a specially prepared booklet titled *Fallout Protection for Homes With Basements*, H-12, which provides information on the degree of fallout protection in their basement and means of improving this protection. If the survey indicates that they do not have the minimum protection suggested, Pf-40, they are provided several alternatives for improvement from which they may choose their own course of action. The alternatives include actions which could be taken in a relatively short time in a period of increased international tension. In addition, a return card is included for requesting detailed fallout protection construction plans, and a list of materials, with approximate costs.

Families responding, in homes without basements, are furnished an emergency information booklet titled *Personal and Family Survival*, SM-3-11-A, and are advised to seek public shelter in an emergency,



U.S. DEPARTMENT OF COMMERCE
 BUREAU OF THE CENSUS
 WASHINGTON, D.C. 20233

BUDGET BUREAU NO. 041-R2400
 APPROVAL EXPIRES DECEMBER 31, 1968

OFFICE OF THE DIRECTOR

**HOME SURVEY
 QUESTIONNAIRE**

Please include your complete identification number, as shown on the top line of the address label, on all correspondence.

Dear Fellow Citizen:

The Bureau of the Census, acting as agent for the Department of Defense, Office of Civil Defense, is conducting a survey to determine how much protection from fallout radiation exists in homes. This is in accordance with the message the President gave to Congress in January 1965, in which he stated:

"It is already clear that without fallout shelter protection for our citizens, all defense weapons lose much of their effectiveness in saving lives. ***We will continue our existing programs and start a program to increase the total inventory of shelters through a survey of private homes and other small structures."

Please answer the questions on the inside of this form. Your replies will be held in strict confidence. On the basis of your answers, you will receive without cost a computer prepared report on the amount of fallout protection now available in your home. The report will be based on the best professional and scientific knowledge available on this subject. If the analysis shows you can improve the protective capabilities of your home, you will also receive a booklet describing how these improvements can be made.

For the survey to be complete and accurate, ALL households receiving this form should fill it in and return it promptly to the Bureau of the Census in the enclosed return envelope which requires no postage. Thank you for your cooperation.

Sincerely yours,

A. Ross Eckler

A. Ross Eckler
 Director
 Bureau of the Census

Enclosure

SPECIAL INSTRUCTIONS

If the house (apartment, flat, quarters, etc.) in which you are now residing has not been included in a previous Home Fallout Protection Survey, does not have a basement or you do not know the Protection Factor of the basement, go to page 2, item 1.

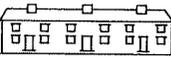
If the house (apartment, flat, quarters, etc.) in which you are now residing has been included in a previous Home Fallout Protection Survey, enter the Protection Factor rating in the box at the right and skip to page 4, item 12.

9	Basement PF		Added weight
	Center	Best corner	

Note: THIS FORM SHOULD BE COMPLETED AND RETURNED WHETHER YOU ARE A RENTER OR A HOME-OWNER, WHETHER YOU LIVE IN A ONE-FAMILY HOME, OR A HOUSE WITH TWO OR MORE FAMILIES, AN APARTMENT, OR ANY OTHER TYPE OF BUILDING.

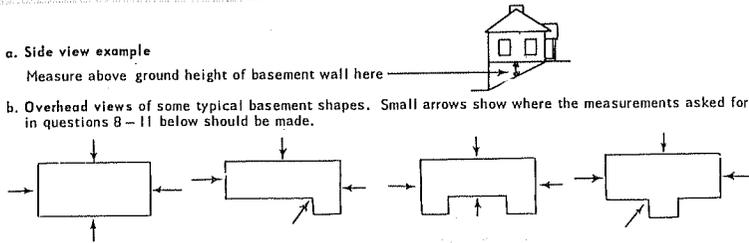
Figure 7.—Home Fallout Protection Survey questionnaire. (Four pages, page 1.)


 The questions below are about your home (house, flat or apartment) and the building in which it is located. Please answer the questions as accurately as possible. Most answers can be made by placing a or X in the appropriate box. Please answer all questions.

<p>1 How many people usually live in your household (include yourself)?</p> <p>1 <input type="checkbox"/> One 4 <input type="checkbox"/> Four 7 <input type="checkbox"/> Seven 2 <input type="checkbox"/> Two 5 <input type="checkbox"/> Five 8 <input type="checkbox"/> Eight 3 <input type="checkbox"/> Three 6 <input type="checkbox"/> Six 9 <input type="checkbox"/> Other - Specify <input checked="" type="checkbox"/></p>	<p>3 Do you have a specially constructed fallout shelter?</p> <p>1 <input type="checkbox"/> No 2 <input type="checkbox"/> Yes</p>
<p>2 Which one of the following best describes this building? (The example drawn for each choice may not show your house exactly; it is given only to describe the TYPE of building.)</p> <p>1 <input type="checkbox"/> Single-family detached house (1, 2, or 3 story) including split-level and ranch type homes </p> <p>2 <input type="checkbox"/> Two-family house, over and under duplex. </p> <p>3 <input type="checkbox"/> Two-family house, side-by-side duplex. </p> <p>4 <input type="checkbox"/> Row house, end unit } </p> <p>5 <input type="checkbox"/> Row house, inner or center unit. }</p> <p>6 <input type="checkbox"/> Three-family house </p> <p>7 <input type="checkbox"/> Other - Specify _____</p> <p>8 <input type="checkbox"/> Trailer</p> <p>9 <input type="checkbox"/> Apartment in building with 4 or more apartments</p> <p style="text-align: right; font-size: small;">} If you marked box 8 or 9, SKIP TO ITEM 12 ON PAGE 4; OTHERWISE CONTINUE WITH ITEM 3.</p>	<p>4 How many floors are in this house? (Do not count basement or attic floors. If there is a basement, either full or partial, count only those floors directly above the basement.)</p> <p>1 <input type="checkbox"/> One 3 <input type="checkbox"/> Three 2 <input type="checkbox"/> Two 4 <input type="checkbox"/> Four or more</p> <p>5 What type of roof does this house have?</p> <p>1 <input type="checkbox"/> Wood or asphalt shingle 2 <input type="checkbox"/> Slate or clay tile 3 <input type="checkbox"/> Other or do not know</p> <p>6 What kind of outside wall makes up the LARGER PART of the FIRST story of this house?</p> <p>1 <input type="checkbox"/> Shingles or siding (wood, asbestos, or aluminum) 2 <input type="checkbox"/> Brick or stone VENEER or formstone 3 <input type="checkbox"/> SOLID masonry (brick, stone, concrete, cinder block, etc.) 4 <input type="checkbox"/> Masonry, but don't know if SOLID or VENEER 5 <input type="checkbox"/> Stucco 6 <input type="checkbox"/> Other</p>
<p>7a Do you have a basement or cellar under this house?</p> <p>1 <input type="checkbox"/> Yes - a full basement 2 <input type="checkbox"/> Yes - a partial basement 3 <input type="checkbox"/> No basement (house on slab or crawl space only) } Skip to item 12</p>	<p>7b What are the BASEMENT WALLS of this house made of?</p> <p>1 <input type="checkbox"/> Cinder block 4 <input type="checkbox"/> Stone or brick 2 <input type="checkbox"/> Concrete block 5 <input type="checkbox"/> Poured concrete 3 <input type="checkbox"/> Cinder or concrete block, not sure which 6 <input type="checkbox"/> Other or do not know</p>
<p>PLEASE READ THESE INSTRUCTIONS BEFORE ANSWERING QUESTIONS 8 - 11</p> <p>QUESTIONS 8 - 11 ARE TO FIND OUT IF YOUR HOUSE:</p> <p>Is attached to another house or building . . . OR . . . is closer than 12 feet to another house or building . . . OR . . . If the nearest house or building is further away than 12 feet, how many feet of the basement wall rise above ground level?</p> <p>• Drawings at the top of the next page show some different shapes of basements. Small arrows show where the height ABOVE OUTSIDE GROUND LEVEL of each basement wall should be measured or estimated, usually at the center of the wall.</p>	

Home Fallout Protection Survey questionnaire, page 2.

EXAMPLES OF MEASURING POINTS



- ▶ Please be sure to answer questions 8, 9, 10, and 11 below. In your answers do NOT consider small buildings such as garages, carports, sheds, etc. to be another building.
- ▶ To identify left and right sides of your house, assume you are on the outside facing the front door.

8 Is the REAR of your house attached to or closer than 12 feet to another building?

1 Yes - Skip to question 9

2 No - About how many feet does the REAR BASEMENT WALL rise ABOVE the outside ground level?

(Mark one box.)

0 <input type="checkbox"/> Under 1 foot	3 <input type="checkbox"/> 3 up to 4 feet	6 <input type="checkbox"/> More than 6 feet above ground
1 <input type="checkbox"/> 1 up to 2 feet	4 <input type="checkbox"/> 4 up to 5 feet	
2 <input type="checkbox"/> 2 up to 3 feet	5 <input type="checkbox"/> 5 up to 6 feet	

9 Is the LEFT SIDE of your house attached to or closer than 12 feet to another building?

1 Yes - Skip to question 10

2 No - About how many feet does the LEFT BASEMENT WALL rise ABOVE the outside ground level?

(Mark one box.)

0 <input type="checkbox"/> Under 1 foot	3 <input type="checkbox"/> 3 up to 4 feet	6 <input type="checkbox"/> More than 6 feet above ground
1 <input type="checkbox"/> 1 up to 2 feet	4 <input type="checkbox"/> 4 up to 5 feet	
2 <input type="checkbox"/> 2 up to 3 feet	5 <input type="checkbox"/> 5 up to 6 feet	

10 Is the RIGHT SIDE of your house attached to or closer than 12 feet to another building?

1 Yes - Skip to question 11

2 No - About how many feet does the RIGHT BASEMENT WALL rise ABOVE the outside ground level?

(Mark one box.)

0 <input type="checkbox"/> Under 1 foot	3 <input type="checkbox"/> 3 up to 4 feet	6 <input type="checkbox"/> More than 6 feet above ground
1 <input type="checkbox"/> 1 up to 2 feet	4 <input type="checkbox"/> 4 up to 5 feet	
2 <input type="checkbox"/> 2 up to 3 feet	5 <input type="checkbox"/> 5 up to 6 feet	

11 About how many feet does the FRONT basement wall rise above the outside ground level?

20 <input type="checkbox"/> Under 1 foot	23 <input type="checkbox"/> 3 up to 4 feet	26 <input type="checkbox"/> More than 6 feet above ground
21 <input type="checkbox"/> 1 up to 2 feet	24 <input type="checkbox"/> 4 up to 5 feet	
22 <input type="checkbox"/> 2 up to 3 feet	25 <input type="checkbox"/> 5 up to 6 feet	

Please turn to next page →

12. LOCATION OF HOME AND NAME OF PERSON COMPLETING FORM	
a. Where is your home located? (Actual location not Post Office address.)	(1) State
	(2) County
	(3) City, town, or village (If not in any city, town, or village write "None.")
	(4) Is your home within the corporate limits of this city, town, or village? <input type="checkbox"/> Yes <input type="checkbox"/> No
b. Your name (Please print)	
c. If your address as shown on the label is incomplete or incorrect, please print your correct mailing address here.	
<hr/> <hr/> <hr/> <hr/>	
<p>Please complete this questionnaire within the next 2 or 3 days and send it in the enclosed self-addressed envelope, which requires no postage to:</p> <p style="text-align: center;">Jeffersonville Census Operations Office 1201 East Tenth Street Jeffersonville, Indiana 47130</p> <p>Please include the complete identification number, as shown on the top line of the address label, on all correspondence.</p>	

FORM DS-100 (3-24-67)

Home Fallout Protection Survey questionnaire, page 4.

and contact their local civil defense authorities for additional information.

Statistical summaries of home fallout protection are furnished to the State and local governments for use in local shelter planning. The total cost averages \$1 per home covered in the survey.

By the end of fiscal year 1967, surveys in the States of Rhode Island, Minnesota, Maine, Utah, Nebraska, Iowa, Kansas, West Virginia, and Colorado resulted in 335,000 additional shelter spaces identified with a protection factor of Pf-40 or higher, and over 8.2 million spaces in the Pf 20-39 category. The great majority of these spaces could readily be improved to the Pf-40 standard, or better. The following table shows, by State, the total number of homes covered, the percent response, and the number of shelter spaces identified since the inception of this program.

TABLE 4.—Home Fallout Protection Surveys, through fiscal year 1967

[In thousands, except percents]

Completed States	Homes covered	Mail questionnaires			Homes covered by enumerators	Shelter space identified ¹	
		Delivered to homes	Mailed back	Percent response		Pf-40 or higher	Pf-20-39 ²
Total	4, 591	2, 320	1, 810	78	2, 271	335	8, 226
Rhode Island	223	223	162	73	-----	66	472
Minnesota	934	420	358	85	514	76	2, 302
Maine	251	251	203	81	-----	44	501
Utah	249	149	114	77	100	8	441
Nebraska	420	151	118	78	269	16	766
Iowa	³ 816	301	229	76	515	37	1, 780
Kansas	³ 661	335	253	75	326	30	833
West Virginia	³ 505	141	104	74	364	24	352
Colorado	³ 532	349	269	77	183	34	779

¹ Based on number of occupants.

² 97.3 percent are improvable at low cost to Pf-40.

³ Completed after close of fiscal year.

In the last week of June 1967, the HFPS was begun in the State of Wyoming. Planning had been started in the States of Vermont, New Hampshire, and Idaho.

OTHER SHELTER EXPANSION METHODS

Other surveys and special techniques were used to locate or develop additional protective space in areas with unfilled requirements for standard fallout shelters. These included the incorporation of fallout shelter design techniques in new construction, at little

or no additional cost, special surveys to locate fallout protection in small buildings, and the provision of ventilation to increase the capacity of inadequately ventilated public fallout shelter already located.

Military Home Fallout Protection Survey.—Separate from, and in addition to, the HFPS, a Military Home Fallout Protection Survey was conducted by each of the military departments of the Department of Defense during fiscal year 1967. Each military department was responsible for determining the survey scope and procedures, and for conducting the survey of its own installations. The Office of Civil Defense provided the questionnaire which was distributed by the installation commanders to all personnel, military and civilian, on or off post, in the United States, its territories, dependencies, and Puerto Rico.

At the close of the survey in June 1967, 1,186 military installations had been surveyed, and over 1,196,000 military home survey forms had been processed by the Bureau of the Census for determination of the amount of fallout protection provided in the basements of these homes.

Design Techniques

Information on new design techniques was widely disseminated among architects and engineers during fiscal year 1967. These "slanting" techniques, initially developed in fiscal year 1964, and continuously improved, provide for enhancing inherent fallout protection features with little or no increase in cost and without sacrificing normal functional qualities or appearance of a building. (See fig. 8.) OCD continues to provide professional advisory services on the use of slanting to architects and engineers.

Direct Mail Shelter Development System (DMSDS).—Initiated during the last month of fiscal year 1967, the DMSDS is an advance information system designed to increase fallout shelter in new construction. The objectives of the system are to identify owners and architects of construction projects at the design stage; encourage them to provide needed fallout shelter; offer them professional assistance from university service centers; follow up through regional, State, and local civil defense action; provide construction leads to joint civil defense support groups; support later survey action; and provide reports and analyses to interested parties. Timely action and close coordination among the F. W. Dodge Construction News Gathering System, owners, architects, State and local civil defense officials, university service centers, and fallout shelter analysts accomplish these objectives.

The system, being tested in Massachusetts, Wisconsin, Tennessee, Louisiana, Florida, Texas, and Arizona, includes procedures for reach-

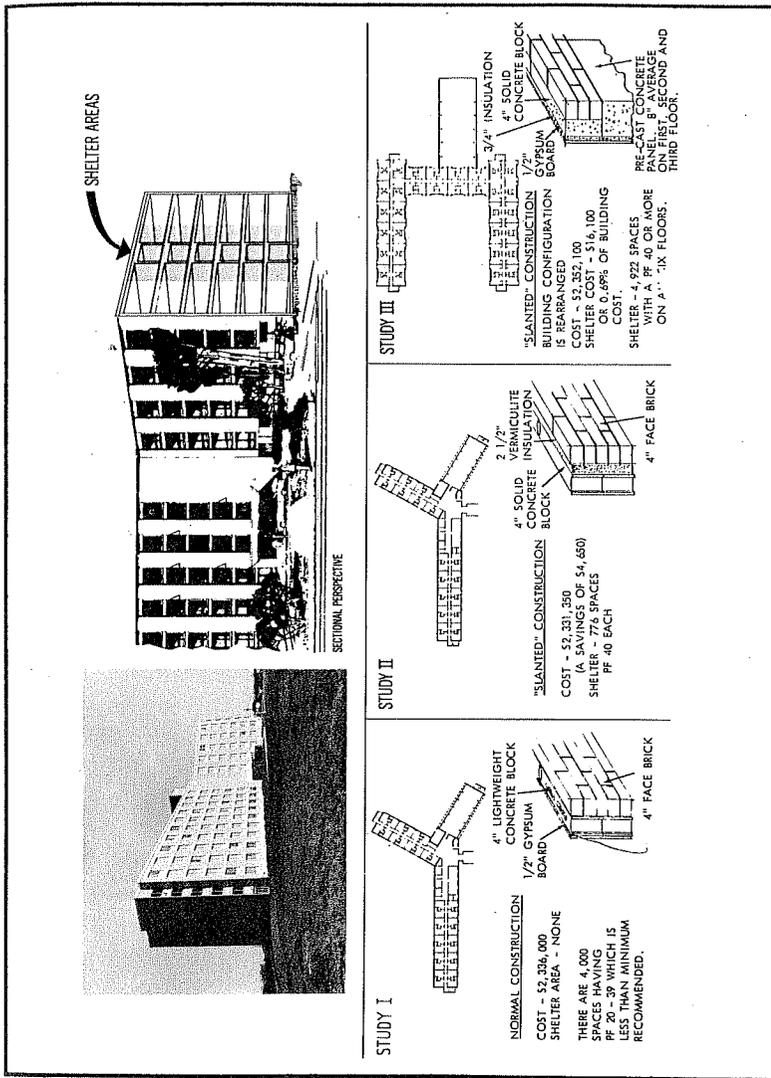


Figure 8.—Use of "slanting" techniques.

ing owners and architects, for gaining owner and architect response, for determining advisory service effectiveness, and for measuring potential versus actual shelter gain and system adequacy and cost.

Federal buildings.—An OCD objective is to make “slanting” for maximum fallout radiation protection a normal practice in the design of all Federal construction. Professional consulting services for this purpose are made available to Federal agencies responsible for the design and construction of new buildings. These services provide a review of requirements and architectural designs to determine the need for fallout protection in a proposed location, the feasibility of providing it economically, and the adequacy of funds requested for it.

Case studies also are made to show the greatest amount of protection obtainable without additional cost and to provide cost estimates for incorporating protective features meeting OCD criteria. The professional advisory service relies upon the use of automatic data processing for analyses of building designs, which makes rapid identification and integration of desired protective features possible in the early stages of design development. Cost-index curves as well as data tables are made available for estimating the cost of these features.

Fiscal year 1967 appropriations authorized the incorporation of fallout protection in 22 specific Federal buildings for the General Services Administration. These buildings, as well as 19 Federal buildings for which similar appropriations were authorized for fiscal year 1966, were included in those covered by OCD advisory service on slanting techniques.

Schools.—The United States Office of Education, Department of Health, Education, and Welfare, agreed with OCD on a program to encourage State and local school construction officials to use design techniques to increase fallout protection in new school construction. This effort was being supported by an assessment of *State Practices in School Construction* by the Council of Educational Facility Planners (formerly, the National Council on Schoolhouse Construction).

The National Commission on Safety Education was developing criteria for projects in Los Angeles, Calif., and Philadelphia, Pa., for locating, analyzing, and utilizing shelter in existing schools. The commission is also developing techniques for analyzing the best existing shelter, improving effectiveness of available shelter, and providing permanent adequate shelter in schools as well as procedures for using the services of qualified shelter analysts.

Packaged Ventilation Kit

A substantial increase in the fallout shelter inventory is possible with the use of the Packaged Ventilation Kit (PVK) developed by OCD. This air exhaust fan system is for use in shelter areas that need added

ventilation in order to take care of more people. Beginning in fiscal year 1966, basement areas of shelter facilities have been analyzed to determine the number of packaged ventilation kits required to furnish adequate ventilation for maximum shelter occupancy. If the programmed future procurement of PVK's is authorized, millions of shelter spaces can be added to the inventory in areas of shelter deficit.

Military Construction

The *Military Construction Authorization Act of 1967* (Public Law 89-568) made provisions for including fallout protection in military construction. A Department of Defense Directive issued on June 20, 1966, provided uniform guidance on objectives, policies, and criteria for determining the nature of the fallout shelter requirements, and on developing fallout shelter plans at all Department of Defense installations.

Based on the Department of Defense directive and other guidance issued by the Office of the Secretary of Defense, each military department has analyzed its vulnerability to strategic nuclear attack and has submitted its protective shelter requirements to the Office of the Secretary of Defense.

Though all of the military department recommendations were not approved, approval was given to program significant funds during the period fiscal years 1968-1972 for protective shelter construction. The fiscal year 1967 military construction program, as submitted to Congress, did not contain a request for funds identified for protective shelter construction. The fiscal year 1968 program did contain a request for funds for that purpose.

PROTECTIVE STRUCTURES

Protection of people responsible for warning the public, carrying on emergency communications, and directing and controlling civil defense emergency operations is important to the effective use of the nationwide fallout shelter system. High priority is given in the civil defense program to providing this protection.

Protection of warning points.—In fiscal year 1964, the OCD began to provide financial assistance to State and local governments, as necessary, for furnishing warning points with fallout protection and emergency power generators. A minimum protection factor of 100 is required because the warning point must be capable of continuous operation in the National Warning System under initial and subsequent attack conditions.

During fiscal year 1967, this operation was limited to warning points for which agreements had been signed before the end of fiscal year 1965. By June 30, 1967, 173 warning points had completed all construc-

tion and installation of equipment; seven points had completed the shelter, but had not installed all equipment; 16 had signed agreements, but had not completed the shelters; and 69 stations that had previously signed the agreements were dropped from the program because of their inability to complete a facility within the limits of funds allotted. In addition to the above 265 stations, 22 warning points had met the OCD requirements without use of Federal funds. Cost of this operation during fiscal year 1967 was about \$20,000.

Extensions were added at alternate warning points and duplicate NAWAS equipment was installed in many local emergency operating centers that provide adequate fallout protection. Consequently, this program was not expanded during fiscal year 1967.

Protection of radio stations.—Construction of fallout protection for 123 radio stations was completed in fiscal year 1967 with OCD financial assistance. This increased to 485 the number of stations provided this protection by means of Federal funds. Nine stations have provided fallout protection without the use of Federal funds.

This protection program provides for continuous operation of the radio network under fallout conditions that may exist after a nuclear attack. Since commercial stations are not normally equipped to operate under these conditions, they are provided Federal funds for this purpose. Participants agree to provide and maintain fallout protection and emergency power equipment in their installation, as well as special communication links to local emergency operating centers. Cost of this operation in fiscal year 1967 was approximately \$1.1 million.

OCD regional operating centers.—Each OCD regional office is an operating center at the Federal level and will be the site of civil defense emergency operations in case of a nuclear attack. (See fig. 9.) These buildings house the peacetime operational staff of the OCD and the Office of Emergency Planning. A few other government agencies maintain staff in the regional offices. OCD plans to provide permanent protected sites for all of the 8 regional offices. The Denton, Tex., center has been operational since February 1964. These buildings are underground structures built and equipped to afford protection to their occupants against some of the effects of a nuclear weapon. The buildings will contain food, water and other supplies for up to 30 days.

Funds available for construction of the Federal regional centers total approximately \$9.9 million: about \$2.1 million from fiscal year 1962, and \$7.8 million from fiscal year 1966 appropriations. The construction contract for the Region One Center was awarded September 21, 1966, and by the end of fiscal year 1967 this center, located at Maynard, Mass., was 36 percent completed. (See fig. 10.)

During fiscal year 1967, preliminary designs for the Region Two Center neared completion. This building will have approximately 59,000 square feet of floor space, divided evenly between two floors. The

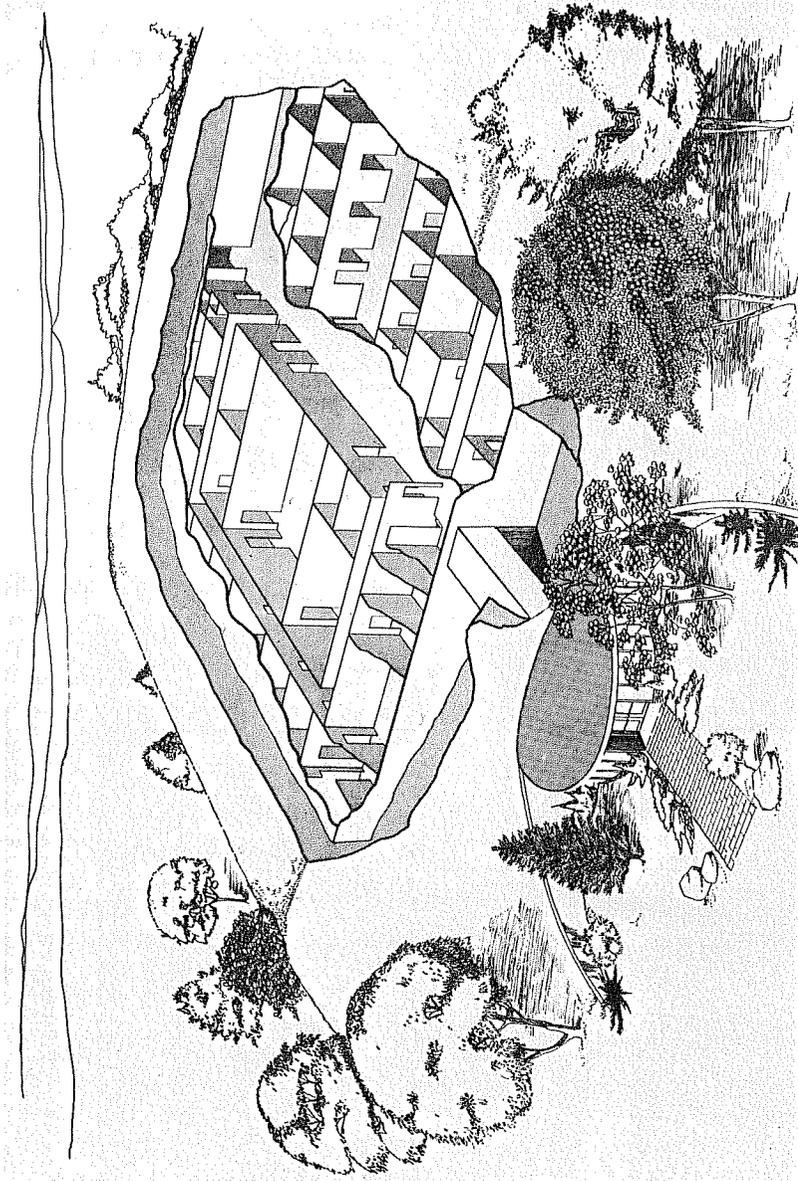


Figure 9.—Artist's concept of Federal regional operating centers.

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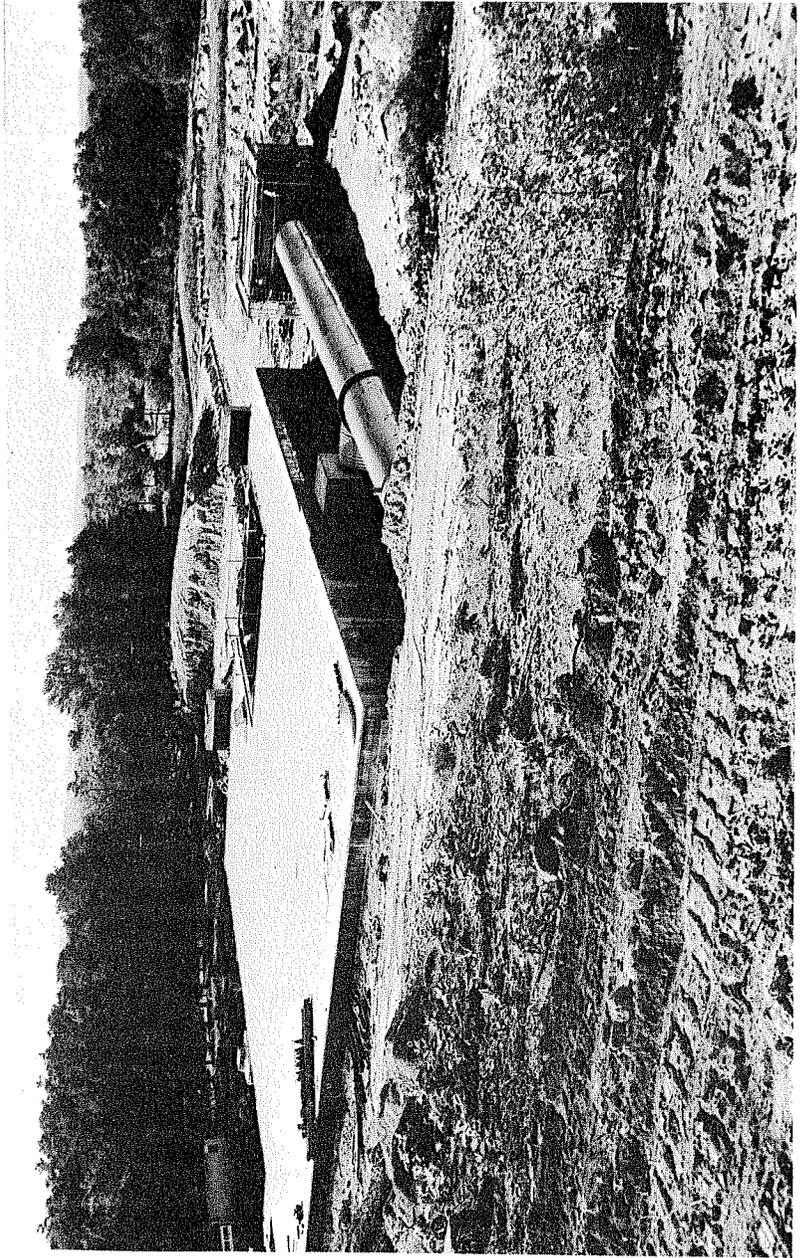


Figure 10.—Region One Emergency Operating Center under construction, Maynard, Mass.

OCD computer operations will be on the lower floor. The site selected is the former NIKE base near Olney, Md. Preliminary design of the Region Three Center, to be located close to the existing headquarters at Thomasville, Ga., has been completed. Final design of the building is in process. Region Four will develop an operational center by converting the basement area of the existing Federal Center in Battle Creek, Mich., to this use. Design of the Region Six Center, to be located within the Denver Federal Center grounds at Denver, Colo., was completed and advertised for construction bids. Locating the construction site for the Region Seven Center required extensive investigation of foundation materials and suitable water sources. A favorable site was located at the Sonoma County Airport. Final design of the Region Eight Center at a NIKE site near Bothell, Wash., was completed, and the construction contract was awarded in June 1967.

State and local Emergency Operating Centers (EOC's).—During fiscal year 1967, Federal matching funds totaling approximately \$6 million were obligated to State and local governments, through OCD regional directors, to assist them in the establishment of protected emergency centers. These funds were used for design and construction of new centers, or modification of existing structures, and for equipping these centers. Federal assistance criteria require 85 square feet of space per staff member and a protection factor (Pf) of 100.

As of 30 June 1967, a total of 2,858 protected EOC's had been established. This total included 197 additional State and local centers financed, during fiscal year 1967, with Federal matching funds. This increased the total of federally funded centers to 969, of which 487 have been completed. In addition, 76 centers were established this fiscal year without the use of Federal funds, increasing the total of non-federally funded centers to 1,889, of which 1,693 have been completed. (See tables 5 and 6.)

The net gain in State and local EOC's was 273, or approximately 9 percent, during fiscal year 1967.

TABLE 5.—*Status of the Emergency Operating Center (EOC) Program as of 30 June 1967*

Category	State	Local	Total
Funded and nonfunded.....	208	2, 650	2, 858
Completed.....	104	2, 076	2, 180
In process.....	104	574	678
Funded (Federal matching).....	170	799	969
Completed.....	82	405	487
In process.....	88	394	482
Nonfunded (100 percent State and local).....	38	1, 851	1, 889
Completed.....	22	1, 671	1, 693
In process.....	16	180	196

TABLE 6.—*Number of State and local EOC's as of 30 June 1967*

Type of center	Grand total	Completed			In process		
		Type of funding			Type of funding		
		Total	Federal match- ing	State and local	Total	Federal match- ing	State and local
Total.....	2, 858	2, 180	487	1, 693	678	482	196
State.....	74	47	39	8	27	24	3
State area.....	134	57	43	14	77	64	13
County.....	606	395	141	254	211	130	81
Combined ¹	571	364	98	266	207	156	51
City or municipality.....	1, 473	1, 317	166	1, 151	156	108	48

¹ City-county, etc.

PROFESSIONAL SUPPORT OF ARCHITECTS AND ENGINEERS

Architects and engineers are helping to extend the nationwide fallout shelter system by focusing attention on protective construction during the initial design stage of thousands of structures built annually. OCD has provided a variety of opportunities, since 1962, for members of the professions to learn how to incorporate fallout protection in buildings and how to develop and maintain capability for planning and designing construction to include such protection. (See

services. The guidance service applies primarily to projects that are in the initial phase of design.

This OCD program was initiated in fiscal year 1965 and is being established in two phases. In the first phase, approximately 30 qualified instructors in fallout shelter analysis have provided services to architects and engineers throughout the Nation, with the cooperation of State and local civil defense officials.

In the second phase, contracts were initially awarded to 26 universities with departments of architecture and engineering for the purpose of establishing professional service centers in their respective States. During the fiscal year, eight additional professional advisory service centers were established, making a total of 33 centers in operation at the end of fiscal year 1967.

University projects.—These projects, conducted through contractual arrangements with various universities, included:

1. *Architectural and engineering development centers.*—Established during fiscal year 1965, these centers, one of which is located in each of the 8 OCD regions, provide planners, architects, and engineers with information on the latest techniques for providing protection from fallout.

Located at the Universities of Colorado, Florida, and Washington, and at Pennsylvania State University, Purdue University, San Jose State College, Texas Agricultural and Mechanical University, and Worcester Polytechnic Institute, the centers are designed to offer programs to integrate the technical capabilities of the institution to serve civil defense requirements. The centers are strategically located, so that each OCD region has one highly qualified institution that serves as a base for dissemination of civil defense technical information to practicing architects and engineers and faculty and students in its area.

Before certain shelter problems can be solved, new technical data are needed. In fiscal year 1967, progress was made in identifying these problems and in incorporating technical data into educational programs and activities. For example, the University of Florida, concerned with the problems of the chemical and thermal environments that will develop within occupied shelters, consolidated all available technical data related to environmental engineering into a readily usable document titled *Environmental Control System for Fallout Shelters*. This technical document will be used as a textbook in OCD-sponsored courses in *Fallout Shelter Analysis* and in future summer institutes. The other centers have submitted the following technical publications to OCD for review: *Mechanical Equipment for Fallout Shelters*, *Effects on Mammalian Species of Whole Body External Radiation for Varying Periods of Time*, *Sanitary Engineering Aspects of Shelter Habitability*, *Shelter Design Planning Guide*, *Protective*

Construction Design Techniques and Methodologies, and Fallout Radiation Shielding Analysis of Structures.

2. *Student fellowships.*—The Graduate Student Development Fellowship Program established during fiscal year 1966 by OCD in cooperation with the American Society for Engineering Education enables graduate students of architecture, engineering, urban design, applied mathematics, and related nuclear sciences to pursue courses of instruction in areas of radiation shielding or architectural studies related to radiation protection. The OCD Fellows study under the guidance of faculty members who have been certified by the DoD as qualified instructors of *Fallout Shelter Analysis*. The instructors assist the students in the selection of courses that enable them to prepare for a professional career in their chosen specialties and, at the same time, provide a solid foundation upon which they can base further civil defense related research and study.

By fiscal yearend, 148 applications had been received by OCD from 74 institutions from which 44 fellowships have been granted. Nine of these grants are in support of students working toward Ph. D. degrees, and the remaining students are working toward Master's degrees. The fields of interest include architecture and civil, electrical, mechanical, and nuclear engineering.

3. *Faculty development.*—A total of 123 faculty members from 100 universities, colleges, institutes, and Service schools participated in summer institutes during fiscal year 1967. This increased to 156 the number of institutions eligible to conduct fallout shelter analysis courses and related activities for architects, engineers, faculty members, and students. The number of qualified instructors throughout the country was increased to 493.

In addition, two topical conferences were held; one was for deans and department heads of architecture, and the other, for faculty of schools of architecture and engineering as well as architects and engineers in private practice, government, and industry. The first conference was held in New York City in May 1967, with 26 deans and department heads of schools of architecture in attendance. The subject of the conference, which was held just prior to the annual meeting of the Association of Collegiate Schools of Architecture, was *The Architect and Civil Defense*. There were 24 architects and engineers in attendance at the second conference conducted by the University of Utah School of Engineering. The subject covered in this conference was *Urban Design for Nuclear and Natural Disasters*.

The faculty development program is administered for OCD, under contract, by the American Society for Engineering Education, which is responsible for arranging for the conduct of the programs through subcontracts with qualified universities. During the summer of 1966, institutes on *Nuclear Defense Design* were conducted by the Univer-

sities of Colorado, Hawaii, and Maine, and by Montana State and North Carolina State Universities.

Technical information, design studies, and awards program.—Eight new technical publications were issued during fiscal year 1967, making a total of 54 distributed on protective construction. These included manuals, guides, technical memoranda, reports, and design studies. A revised textbook *Shelter Design and Analysis*, TR-20, was printed, and the *Directory of Qualified Shelter Analysts* and *Directory of Architects and Engineers Consulting Firms with Certified Fallout Shelter Analysts* were updated.

Collection of information on projects incorporating shelter for use in preparing brochures, reports, exhibits, and other promotional activities was continued in fiscal year 1967. Selected qualified instructors contacted architectural and engineering firms that are engaged in the design of buildings including fallout shelter for the purpose of gathering data, photographs, and other information useful for publicity purposes.

During fiscal year 1967, Pennsylvania State University completed a design study of eight existing buildings around the country and a proposed elementary school in Fairfax, Va. The existing buildings were selected for their excellent architecture and included a dormitory in University Park, Pa.; a courthouse in Canyon City, Colo.; a hospital in Little Rock, Ark.; and a shopping center in Albuquerque, N. Mex. The original architects were teamed with students to redesign the buildings with the addition of dual-use shelter requirements. The cost differentials were calculated, and at least one building cost less to build with the shelter added. The new design for a Fairfax County, Va., school consisted of complete alternate working drawings, so that actual bids might be taken to determine the shelter cost. Results of the study will be published for use of architects, engineers, and others with a need for the information.

In early June 1967, a contract was awarded the University of Utah to conduct an architectural design study of California schools to determine the types of additions that will be required for the incorporation of radiation protection. The resulting information will not only be applicable to California schools, but to schools in the rest of the country as well. The work will be done by qualified architects, teams of architectural students, and nationally known educational consultants.

During the fiscal year, an awards program was conducted for OCD by the American Institute of Architects. The purpose was to give appropriate recognition to examples of good architecture recently completed that incorporate dual-use fallout shelter. Three first honor award plaques and five awards of merit were presented to the building owners, and certificates of recognition were presented to the architects

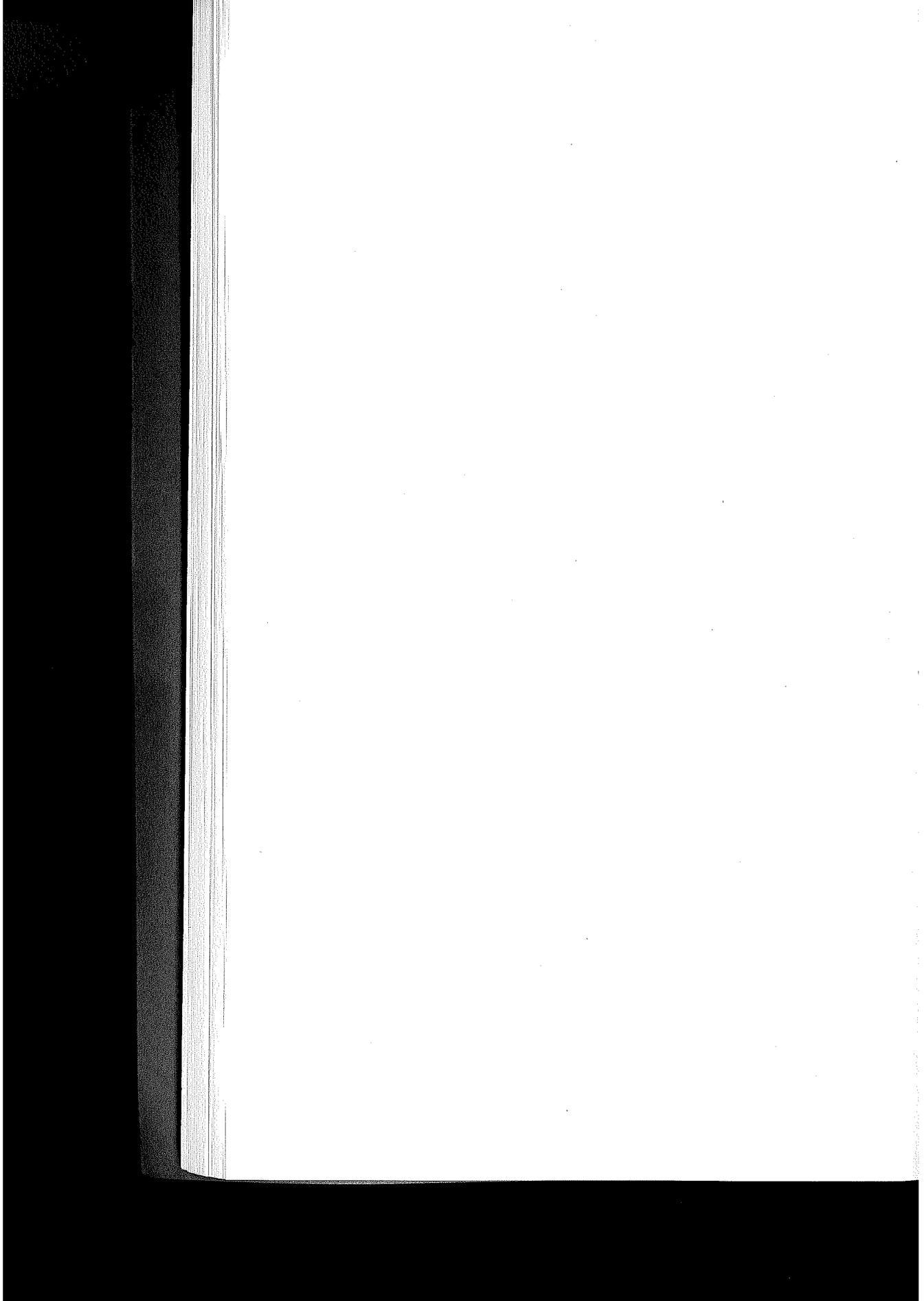
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and fallout shelter analysts. The results of the awards program will be published in a brochure for distribution to architects and engineers. In addition, an architectural film of the results will be made by the American Institute of Architects for use by its members and others to further demonstrate that buildings with shelter can be designed without adversely affecting their function, appearance, or cost.



Part IV

COMPLEMENTARY CIVIL DEFENSE SYSTEMS

In addition to the nationwide fallout shelter system, complementary civil defense systems are necessary to achieve a balanced civil defense program. These systems—Civil Defense Alerting and Warning, Communications, Monitoring and Reporting, and Damage Assessment—are essential for the effective use of shelter and for preattack planning and postattack operations.

CIVIL DEFENSE ALERTING AND WARNING

Alerting.—The Office of Civil Defense is responsible for alerting Federal agencies and State governments in the event of developments that call for action to increase the Nation's readiness posture. Procedures for carrying out this responsibility are tested weekly at the national level and quarterly at the regional level, either separately or as a part of military or civil defense exercises.

During fiscal year 1967, the OCD continued to make use of the Defense Coordination (DEFCORD) teletypewriter network to alert 37 Federal agencies in the Washington metropolitan area. This teletypewriter system, which can send alerting messages simultaneously to most Federal agencies at the national level, was established by the Office of Emergency Planning to furnish guidance to Federal agencies on actions to be taken during emergencies. It is the basic means by which OCD alerts Federal agencies at the national level; however, a telephone alerting arrangement serves as backup to DEFCORD. The OCD regional offices furnish alert notices to Federal field agencies, using a telephone system.

Warning.—The U.S. Army Strategic Communications Command (USASTRATCOM), under OCD policy control, maintains, operates, and tests the Federal warning systems. These systems are designed for disseminating warning to strategic points from which State and local governments are responsible for warning the public. A Civil Defense Warning System (CDWS) is operated throughout the continental United States, including Alaska. Using the most reliable communications facilities available, the CDWS brings together Federal, State, and local warning systems to form a huge warning network. Separate warning systems serve Hawaii, American Samoa, Guam, Puerto Rico, and the Virgin Islands.

During the fiscal year, the meaning and application of civil defense warning signals were redefined. The attack warning message was reworded, as follows:

THIS IS AN ATTACK WARNING, REPEAT, THIS IS
AN ATTACK WARNING. TIME _____ HOURS
ZULU,¹ DATE _____.

The attack warning signal is a 3- to 5-minute *wavering* tone on sirens or short blasts on horns or other devices, repeated as necessary. (See fig. 11.) The attack warning signal means that protective action should be taken immediately. As a matter of national civil defense policy, the attack warning signal is used for no other purpose and has no other meaning. Public warning devices may also be used to get the attention of the public in times of imminent peacetime emergencies. The signal to be used for this purpose is known as the *attention* or *alert* signal, and is a 3- to 5-minute *steady* tone. It will be sounded strictly at the option and on the authority of local government officials, and will be activated under such circumstances as local officials may determine. In addition to any other meaning or requirement for action, as determined by local government officials, it means to all persons in the United States: *Listen for essential emergency information.*

Federal Warning Systems

National Warning System.—The Federal portion of the CDWS serving the continental United States is the National Warning System (NAWAS). (See fig. 12.) From three civil defense warning centers, continuously manned and operated for OCD by USASTRATCOM warning officers, warnings and warning information can be passed to OCD regional offices and to 893 warning points within a few seconds. (See fig. 13.) These warning points are in key Federal locations, State capitals, and other cities. The primary National Warning Center is in Cheyenne Mountain, Colorado Springs, Colo.; alternate centers are the National Two Warning Center at Federal Center, Denton, Tex., and the National Three Warning Center near Washington, D.C. During fiscal year 1967, there were 132 warning points added to NAWAS to improve warning service to Federal installations and local areas.

During the latter part of fiscal year 1967, a memorandum of understanding between the OCD and the Federal Aviation Administration (FAA) was developed. (See appendix 4.) Arrangements were made for the FAA to receive *attack warning* messages over NAWAS and to relay the messages over an FAA teletypewriter system to approximately 375 FAA facilities in the continental United States. Some

¹ Greenwich time.

THE ATTACK WARNING SIGNAL



A WAVERING TONE OR SHORT BLASTS FOR 3 TO 5 MINUTES --
ACTUAL ATTACK AGAINST THIS COUNTRY HAS BEEN DETECTED --
TAKE PROTECTIVE ACTION IMMEDIATELY !

THE ATTENTION OR ALERT SIGNAL



A STEADY BLAST OR TONE FOR 3 TO 5 MINUTES --
LISTEN FOR ESSENTIAL EMERGENCY INFORMATION !

Figure 11.—Civil defense warning and alert signals.

of these FAA facilities are in locations where NAWAS has not been installed. The necessary arrangements can be made by local civil defense directors at these locations to receive warning information from the local FAA facility chiefs.

Washington Area Warning System.—This system, serving the Washington, D.C., metropolitan area, comprises 292 sirens and facilities for voice communication with local civil defense headquarters in the area as well as with certain Federal, civilian, and military installations.

Warning for Hawaii and United States possessions.—Warning facilities at appropriate military installations serve these areas. The Federal warning system serving warning points in Hawaii also extends to Guam and American Samoa. Another Federal system serves points in Puerto Rico and the Virgin Islands.

Radio Warning, Decision Information Distribution System (DIDS).—The design and analysis of a radio warning system were completed during the year. This would be a low frequency radio station network to provide warning information directly from the three National Warning Centers to all levels of government in the continental United States. Through the use of nine distribution transmitter control facilities, written and voice warnings could be received, and outdoor sirens could be sounded automatically at locations with special terminal equipment.

The program for DIDS would provide transmitter and control devices and receiving terminals for voice. Some of these terminals would also be equipped for receiving written messages. Control terminals for local siren systems and individual sirens would be included. Typical locations for the receiving terminals would include Federal

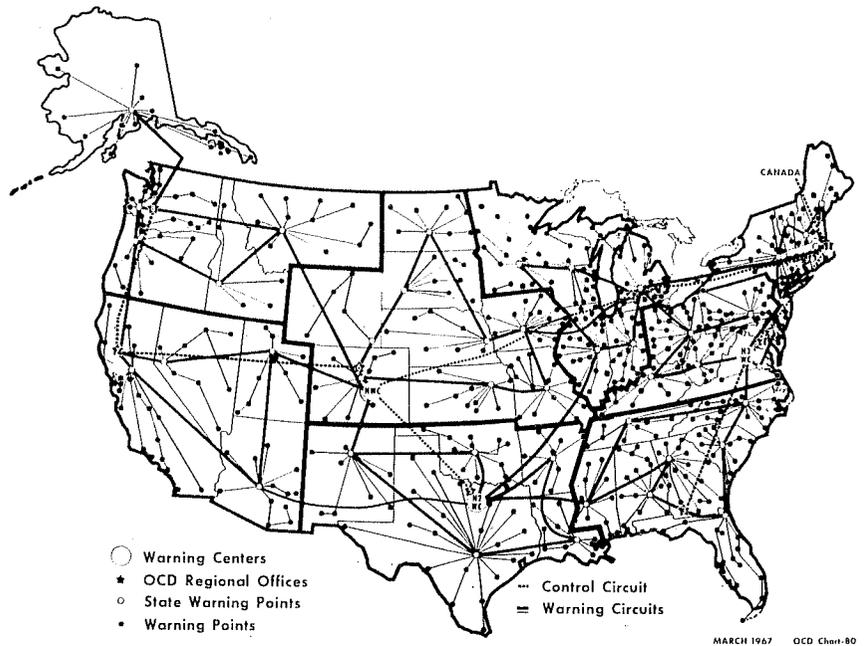


Figure 12.—National Warning System (NAWAS).

and State government agencies; State, city, and county emergency operating centers; NAWAS warning points; and emergency broadcasting radio stations which, in turn, would rebroadcast the warning to the general public.

In providing a direct warning from Federal to local levels, the DIDS response time nationwide would be 30 seconds. Design requirements include such effectiveness criteria that 99 percent of all receiving terminals would receive an intelligible voice message at least 90 percent of the time.

State and Local Warning Systems

State and local governments provide a variety of communications facilities for sending warning and supplemental information from the 893 NAWAS warning points to thousands of local warning points. Telephone typewriter and radio circuits, as well as specially devised warning systems, are used for this purpose. The OCD provided guidance and financial assistance to States and their political subdivisions for the purpose of strengthening their warning systems. By means of Federal matching funds, NAWAS extensions have been installed at 367 locations important to local civil defense organizations.

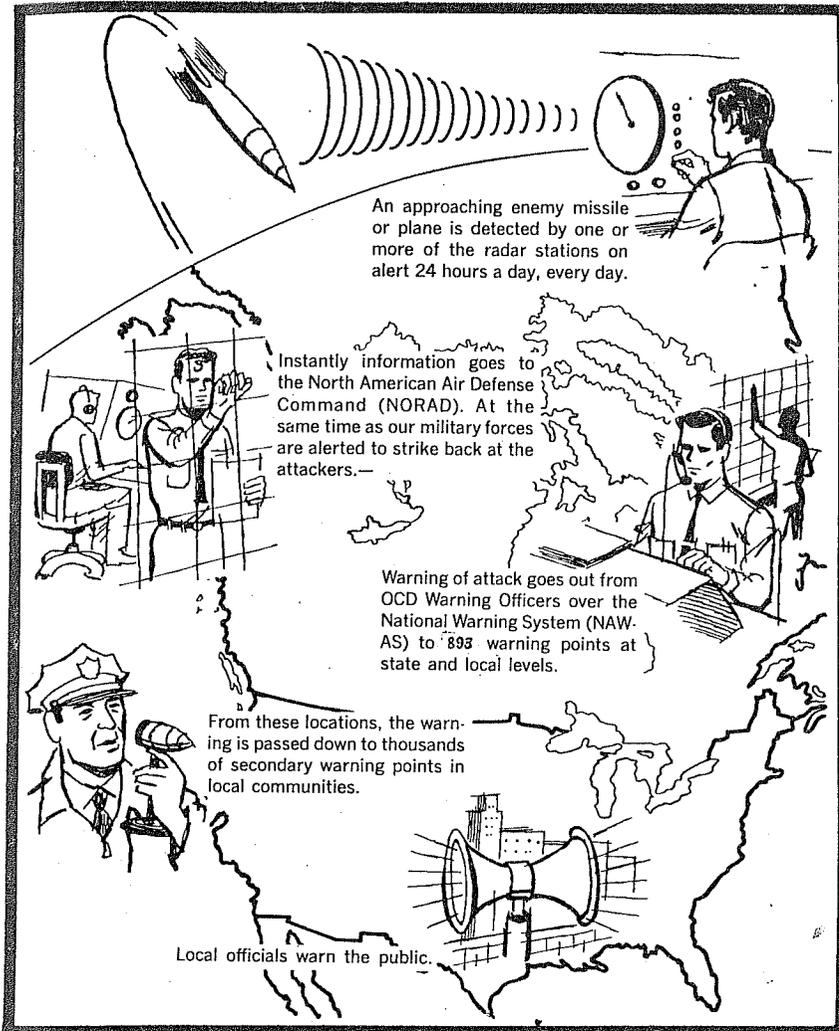


Figure 13.—Warning network in operation.

COMMUNICATIONS

Operational Communications

Effective communications systems are required for conducting civil defense operations on a nationwide basis. The two communications systems described below are maintained and operated by the U.S. Army Strategic Communications Command (USASTRATCOM) in accordance with the policy guidance and requirements furnished by OCD.

NACOM 1.—The primary system for transmitting OCD operational communications is the Civil Defense Telephone and Teletype System (NACOM 1). It is specifically designed for the speed, flexibility, and continuity of service required for civil defense emergency operations. (See fig. 14.) The trunkline circuits of the Department of Defense Automatic Voice Network (AUTOVON), are used for NACOM 1 connections between OCD national and regional headquarters. Between the OCD regional headquarters and the State civil defense offices, separate, full period telephone and teletype circuits are used. NACOM 1 extends to emergency relocation sites of selected Federal agencies and can be interconnected with commercial, military, and Federal teletype systems.

Fiscal year 1967 improvements to NACOM 1 included the installation of facsimile equipment, which permits transmission of pictorial and typewritten material, in seven OCD regional offices. Circuit preemption capability was installed in all OCD regions except Region Five, and it was ordered for that region. The Defense Communications System teletype circuits into the OCD regional communication centers were converted to the Automatic Digital Network (AUTODIN).

NACOM 2.—During fiscal year 1967, NACOM 2 was installed in two additional States, and contractual arrangements were made with seven additional States. As a backup system for NACOM 1, the Civil Defense Radio System (NACOM 2) has been installed in OCD headquarters, in all OCD regional headquarters, in 39 States, the District of Columbia, Puerto Rico, and the Canal Zone. (See fig. 15.) This is a high frequency radio network for transmission of voice, code, or radio-teletype messages. Control facilities for both NACOM systems are located in the same area to make them equally available. NACOM 2 also can be used to contact Continental United States (CONUS) Army Headquarters and some Atomic Energy Commission installations.

Emergency Broadcast System

The Emergency Broadcast System (EBS) is managed by the Federal Communications Commission in cooperation with the broadcasting industry, in accordance with Executive Order 11092, February 26, 1963, for the use of the President and national, State, and local officials in reaching the public promptly with emergency information preceding, during, and following enemy attack. The plan for its operation is based on the requirements of the White House, the Office of Emergency Planning, and the OCD.

At the end of the year, a total of 2,714 broadcasting stations had national defense emergency authorization to participate in EBS. Throughout the year, OCD continued the program of providing fall-out protection, emergency power where needed, and radio links to

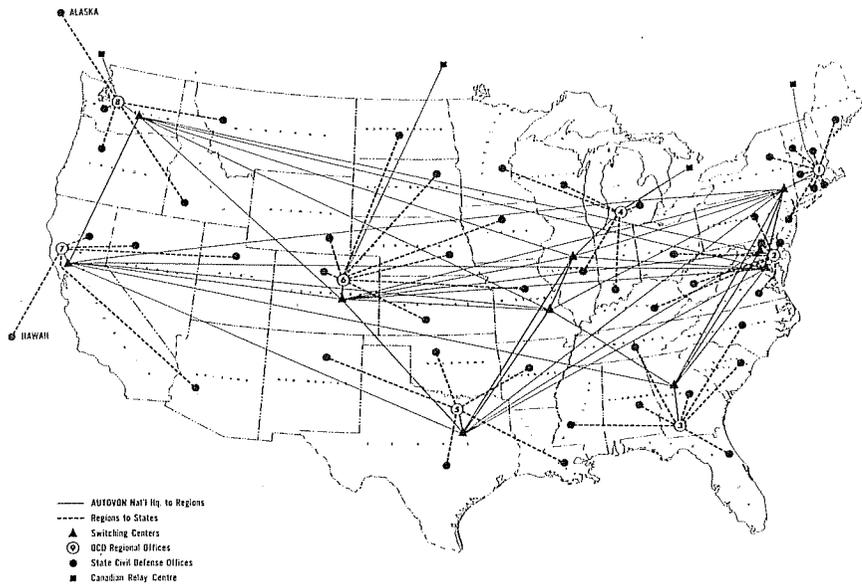


Figure 14.—Civil Defense Telephone and Teletype System (NACOM 1).

EOC's for key EBS stations to enable them to remain on the air in a fallout environment and to provide national coverage. During the year, 52 additional stations signed agreements to participate in the OCD program, and nine stations participating in previous years were dropped from the program. This left a total of 628 stations, of which 485 had completed fallout protection, and 357 of the 485 had also provided required equipment.

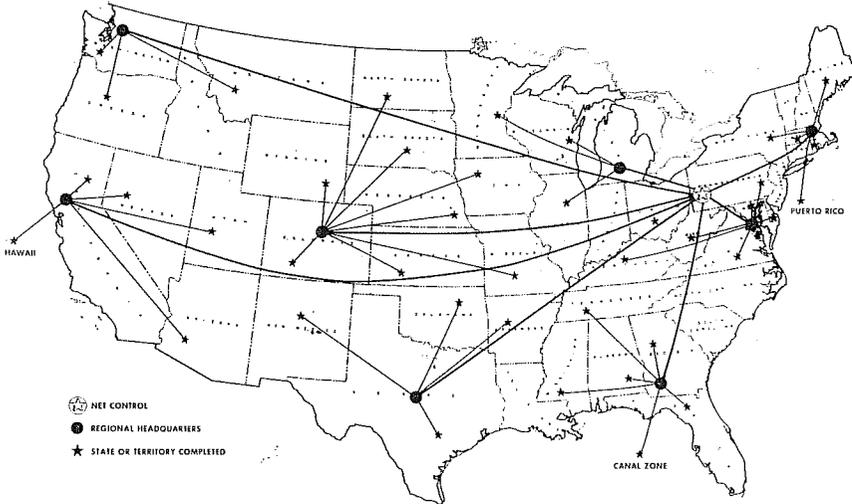


Figure 15.—Civil Defense Radio System (NACOM 2).

Support of State and Local Communications Systems

OCD continued to assist State and local governments by providing matching funds and guidance for development of emergency communications capabilities. An *Emergency Communications Manual* was issued as part E, chapter 3, appendix 1, of the *Federal Civil Defense Guide*. This manual outlines the steps that should be taken by State and local governments to make use of existing communications capabilities before additional requests for equipment are made.

The Radio Amateur Communication Emergency Services (RACES) continued to be an important emergency supplement to State and local communications systems. At the end of fiscal year 1967, there were about 258,000 amateur radio operator licenses. An estimated 35,000 of the amateurs were participating in the RACES program and operating 12,303 authorized stations.

RADIOLOGICAL MONITORING AND REPORTING

A controlling influence on all aspects of civil defense emergency operations would be the extent, intensity, and duration of radioactive fallout following a nuclear attack. An effective system for detecting and monitoring radiological fallout is essential to insure the optimum saving of lives. Under various combinations of attack and weather, any area of the country may be subjected to a serious fallout situation. Radiation emitted by the fallout could cause tens of millions of casualties, prevent the carrying out of emergency postattack operations, restrict the survivors' ability to work, and prevent the use of some areas and facilities for weeks or months. A nationwide radiological monitoring system has been designed for the collection, evaluation, and dissemination of radiological information to all levels of government. Major operational elements of this system include radiological monitors and equipment in public fallout shelters and at strategically located monitoring stations as well as personnel at emergency operating centers to process and evaluate the data, and personnel and facilities to maintain and calibrate radiation instruments.

Monitoring Operations

Monitoring stations.—A grand total of 63,143 Federal, State, and local radiological monitoring stations were operational by the end of fiscal year 1967. (See fig. 16.) This included 12,529 Federal and 50,614 State and local stations. The net gain for the year was 2,758 State and local stations and 2,323 Federal stations, or a total net gain of 5,081 stations. Each monitoring station meeting minimum requirements has been provided with one radiological defense operational set CD V-777. The requirements include suitable geographic location, fallout pro-

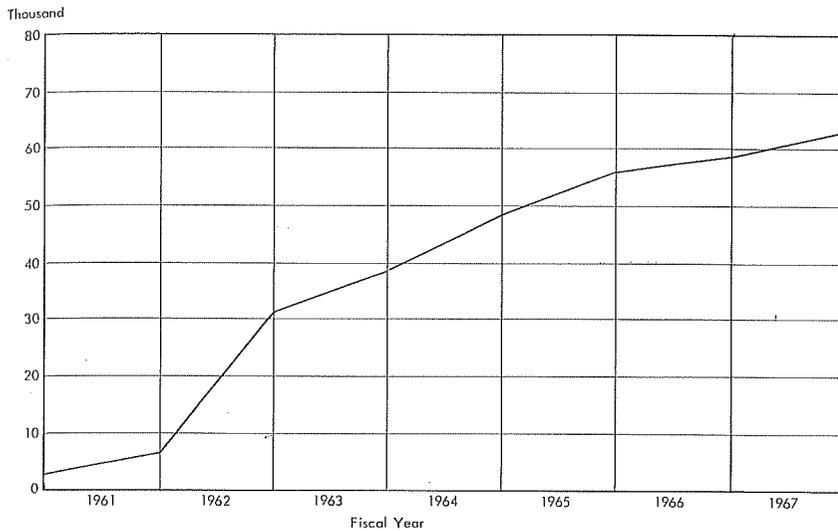


Figure 16.—Growth in number of Federal, State, and local radiological monitoring stations.

tection, adequate communications facilities, and at least two trained radiological monitors. Some stations are located in public fallout shelters that meet the requirements. The monitoring staff in these cases would perform both shelter and operational monitoring functions. Upon completion of their primary assignments, shelter monitors would be reassigned to general support monitoring functions.

Some monitoring stations are located at sites of Federal agencies that have been assigned civil defense responsibilities by Executive orders. Some are located at State facilities; but the majority, established by local governments, are at local facilities. During an emergency, Federal stations would supply the local governments with fallout data, as provided by established agreements. In addition, certain Federal stations would transmit fallout data to the OCD.

Selected monitoring stations are furnished additional radiological defense equipment in the form of the radiological monitoring support set CD V-777A. It includes a remote reading, high range survey meter that permits radiation measurements to be taken up to a distance of 25 feet. This permits monitors within stations to obtain radiation measurements with a minimum of exposure to high radiation intensities that may exist outside. The support set also makes more survey meters available to stations that are assigned extensive mobile monitoring tasks or aerial monitoring support operations. The remote reading survey meter is made available separately for selected monitoring locations that do not require the entire support set.

Shelter monitoring.—A total of 84,131 public fallout shelters had been provided with at least one radiation kit CD V-777-1 by the end of the year. This was a net increase of 6,764 during the year. At least two trained radiological monitors are scheduled for each of these shelters.

Radiation measurements in each shelter would serve as a basis for determining: (1) The best protected shelter areas in a facility; (2) whether adjoining areas of the facility should be used to alleviate crowding when radiation intensities permit; and (3) the amount of radiation exposure to be recorded for shelter occupants. The information would also be used to determine emergency excursions outside the shelter, and as a basis for requesting advice from the EOC on emergency action in extreme situations. Finally, these data would be the basis for situation information for shelter occupants and would furnish RADEF information for the shelter manager's report of the general shelter status to the EOC.

Aerial monitoring.—The Federal Aviation Administration (FAA) has developed a State and Regional Defense Airlift (SARDA) Plan that provides for emergency use of non-air-carrier aircraft. Thirty-five States have developed supporting SARDA plans which were approved by the FAA during fiscal year 1967. Capability for aerial radiological monitoring operations is being developed by each State in consonance with these plans. During the fiscal year, 45 States have been furnished equipment to develop aerial radiological monitoring capability. This equipment included 140 CD V-781 aerial survey meters and supporting instruments.

Aerial monitoring is designed to supplement the work of monitoring stations and their mobile teams and would be necessary for obtaining early data upon which to plan immediate emergency operations. It would be the only practical means of rapidly monitoring farming and grazing lands, as well as other large rural areas. Aerial monitoring would also be needed to overcome monitoring limitations caused by damage to on-station monitoring locations and by restrictions on mobile surface monitoring in areas having high radiation intensity.

Postattack radiation exposure control.—The States have been supplied with 1,640,040 dosimeters and 70,003 dosimeter chargers for use in measuring the cumulative radiation exposure of emergency personnel conducting postattack operations. It is necessary to take this precaution in order to avoid excessive radiation.

Fallout forecasts.—The U.S. Weather Bureau continued, under contract to OCD, to disseminate data on upper wind observations throughout the continental United States. This information, transmitted twice daily over weather reporting circuits to several hundred locations is redistributed as needed, and can be used at emergency operating centers to develop fallout forecasts.

Distribution and Servicing of Instruments

Distribution.—Radiological defense instruments distributed during fiscal year 1967 totaled 133,383, making a cumulative total of over 3.3 million as follows: (Also, see fig. 17.)

Public fallout shelters.....	451, 355
State and local operational purposes.....	2, 025, 883
Federal operational purposes.....	228, 581
Maintenance float stock and replacement.....	103, 119
Training and other purposes.....	527, 930
Total	3, 336, 868

Contracts were awarded during fiscal year 1967 in the amount of \$1.8 million to procure replacement radiological source sets, repair parts for radiological monitoring instruments, and electronic test equipment for the State maintenance and calibration facilities.

Inspection, maintenance, and calibration.—Radiation detection and measuring instruments are the only known means for determining the exact hazard to people and animals from radioactive fallout. They are required for measuring exposure rates and doses in shelters and also for warning people against overexposure when performing emergency services outside of shelters for limited periods of time in a fallout environment. To provide a reliable operational capability, these sensitive instruments must be periodically inspected, calibrated, and repaired. At the end of fiscal year 1967, the federally funded inspection, maintenance, and calibration program was in operation in the 50 States, the District of Columbia, and Puerto Rico. The instruments

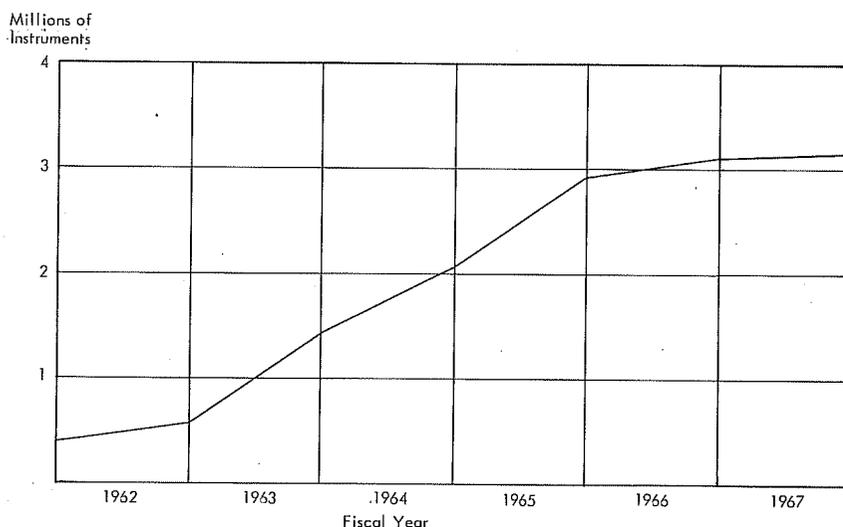


Figure 17.—Cumulative distribution of radiological defense instruments.

are calibrated and maintained at central facilities that are a part of the States' systems, and major repairs are made there. The service also includes the pickup and return of the instruments.

Training and Technical Guidance

During fiscal year 1967, additional radiological monitors were trained at U.S. Army bases and through the Civil Defense Adult Education and the Civil Defense University Extension Programs. Monitor instructors were trained at the OCD Staff College and by means of State college and university extension courses. At least two monitors were trained for each of the 63,143 monitoring stations in operation by the end of the fiscal year. To provide for a 24-hour sustained emergency operational capability, many stations have additional trained monitors. Technical guidance for planning, implementing, and operating the radiological defense system is furnished to State and local governments in the Federal Civil Defense Guide.

DAMAGE ASSESSMENT

Damage assessment is an important element of the civil defense program. In the preattack period, it is used to develop the best possible estimates of the potential range of damage to people and resources, based upon varying enemy capabilities and civil defense postures. During and after an attack, it provides a basis for informed direction of emergency operations. Damage assessments may either be computed estimates or estimates based on visual inspection or aerial reconnaissance.

Readily available information on the surviving population and on resources remaining after attack would, in large measure, be a basis for determining the most effective actions that could be taken to achieve national recovery. This information would be needed by governments at all levels to make basic decisions for conducting emergency operations. Federal departments and agencies, in consonance with Executive orders and OCD plans and programs, are responsible for maintaining damage assessment capabilities related to their normal functions and for providing pertinent data to the Department of Defense, OCD.

Major developments and accomplishments in damage assessment and related planning during fiscal year 1967 included the following items performed either directly by the OCD or under OCD sponsorship:

1. Completion of the portion of the Manual Damage Estimation System which provides a capability for analysis of nuclear damage effects on the population and housing. The technical aspects of this system are the responsibility of the National Civil Defense Computer Facility.

2. Completion of an inventory of epidemiological laboratories by the Public Health Service of the Department of Health, Education, and Welfare. The inventory provides data that will help to identify a network of epidemiological laboratories and to conduct damage assessment studies on these facilities. The laboratories are used in the identification of agents which cause epidemics. Prompt identification of such agents in a postattack environment could lead to a considerable saving of lives.

3. A feasibility study of waterworks systems to evaluate their capability to provide water to postattack survivors was nearly completed.

4. A periodic survey undertaken by the Federal Power Commission which has resulted in the updating of the electric power data base in generators and substations. Pertinent data for vulnerability and damage assessment studies were made available by minor additions to the survey form.

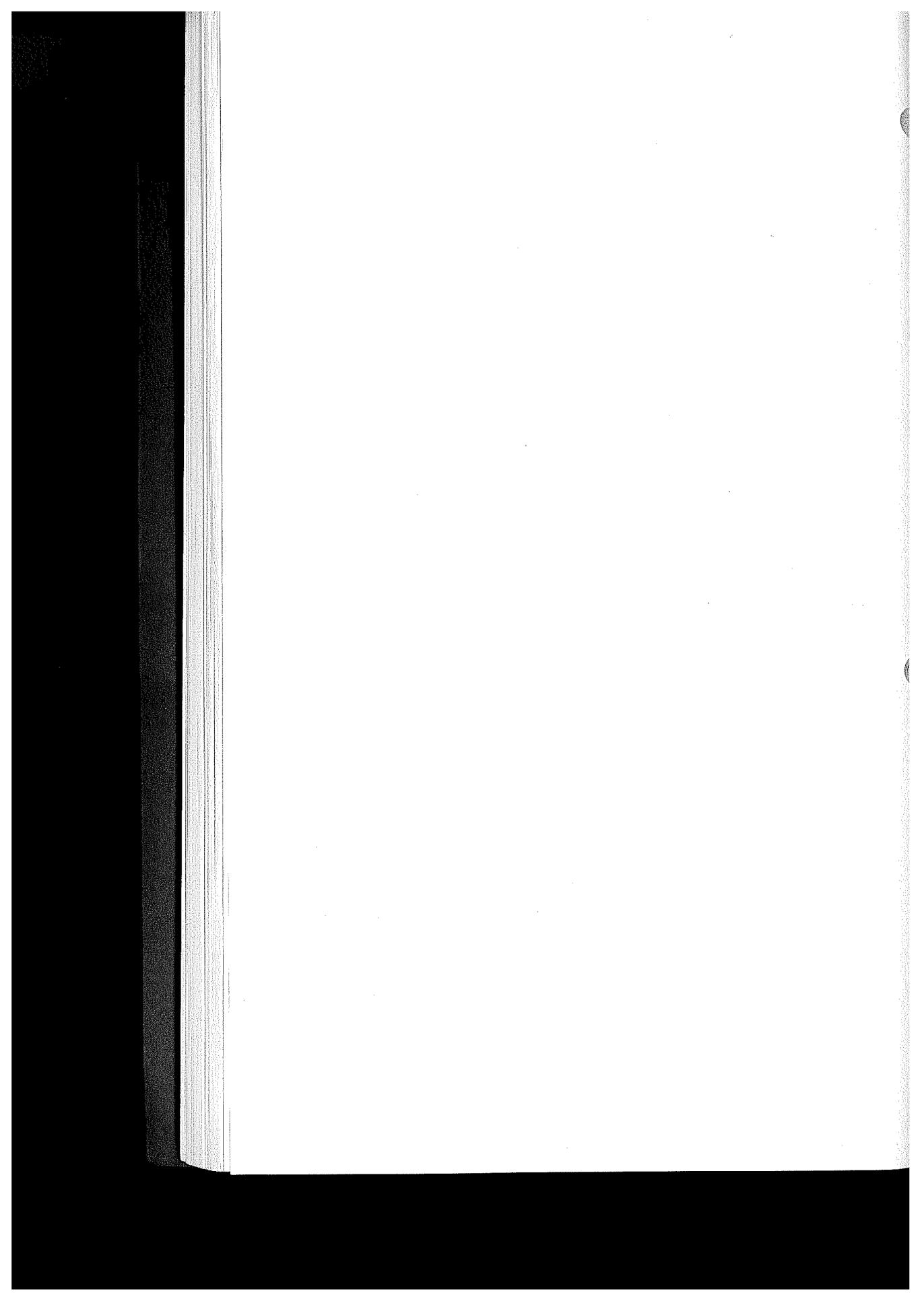
5. Development of the survey techniques to be used in obtaining estimates of the postattack population of each State, OCD region, and the entire Nation.

6. An OCD contract with the Office of Oil and Gas, Department of the Interior, to collect information on petroleum storage at the local level through the Bureau of Census. This will provide information for use in updating the data base resource categories on petroleum storage.

7. Furnishing analyses of shelter deficits, shelter development in new construction, civil defense operational capability, and the life-saving potential of alternative shelter deployment under hypothetical attacks in the 1970 period. Estimates were made of shelter deficits resulting from a range of restrictions due to distance and travel time. Restrictions simulated those believed typical of community shelter plans.

8. Statistical analysis of the amount of shelter space found in recently completed buildings. This serves as a basis for predicting the number of shelter spaces in future construction.

Also, the National Military Command Service Support Center, the Department of Transportation, and the Economic Development Administration are sharing in the funding of current year population estimates and projections. The data will be prepared by the Census Bureau for each county in the United States, and various portions of the project will be completed at 6-month intervals up to December 1968.



Part V

FEDERAL ASSISTANCE

The purpose of all OCD Federal assistance programs and activities is to help State and local governments develop maximum civil defense capabilities efficiently and economically. Some type of Federal assistance to State and local government is available in practically every element of the civil defense program. Federal assistance contributed to the development of the nationwide fallout shelter system, the complementary civil defense system, the Community Shelter Planning program, and other major civil defense activities covered in this part of the report.

TECHNICAL ASSISTANCE AND GUIDANCE

Management of all aspects of Federal assistance to State and local governments by OCD is accomplished through the use of annual program papers and the dissemination of information obtained from them and from other sources. A series of system development projects provides additional knowledge needed in helping State and local governments develop and strengthen their civil defense programs.

Management Control

Integrated Management Information System (IMIS).—The Integrated Management Information System of the Office of Civil Defense is a computer-based information system which includes the procedures for data input; a data bank for storage of information required for the system; and the routines for preparing management reports.

The system permits the Office of Civil Defense to determine periodically the accomplishments of jurisdictions submitting program papers; compare the goals of State and local jurisdictions with those established for the national OCD programs on immediate, annual, and longer time bases; and measure State and local program progress by relating progress to goals and elapsed time. It permits the OCD to evaluate staff manpower utilization of local civil defense jurisdictions and to calculate the emergency capability of local civil defense agencies, and it indicates apparent weaknesses and strengths of the localities in protecting the people within their jurisdictions from fallout and associated hazards.

The most important data source in the IMIS is the program paper and progress report for local civil defense. This document is used alternately as a program paper and a progress report at 6-month intervals and contains sufficient data to operate IMIS.

Each participating local government is provided a preprinted program form listing the specific activities and elements of a balanced civil defense program, with appropriate provisions for reporting each item quantitatively. This form is then computer-processed, so that updating action only is needed before returning it to headquarters. Activities listed include community shelter use planning, public fallout shelter stocking, training of shelter managers and radiological monitors, establishment of emergency operating centers, and other necessary actions. Review of the completed forms by State and OCD officials helps them to provide local governments with more effective guidance for planning and operating their civil defense programs.

In addition to the 50 States, more than 4,200 political jurisdictions, covering about 86 percent of the national population, submitted annual program papers and related semiannual progress reports in fiscal year 1967. Political jurisdictions submit these documents as a prerequisite to obtaining Federal matching funds and surplus property donations for civil defense use.

Becoming operational early in fiscal year 1966, IMIS, while remaining largely developmental, issued over 4,000 turnaround progress reporting forms to local governments. During fiscal year 1967, design modifications were made and tested, and many improvements were included in the revised forms.

It is expected that this computer-based management information system will prove to be a more and more valuable tool for management at the Federal, State, and local levels to use in monitoring and evaluating State and local program papers. Special summaries and reports which can be produced by IMIS will enable management to determine accomplishments, measure progress, compare goals, and evaluate manpower utilization.

During the year, all OCD regional officials were indoctrinated in the use of IMIS management reports as part of a continuing field testing program. Field testing will continue during fiscal year 1968.

Increased Readiness Information System (IRIS).—Studies and experiments to determine the control requirements for the operation of civil government in an emergency were initiated in fiscal year 1966 and continued in fiscal year 1967. IRIS, which resulted from these studies and experiments, provides a base for decisionmaking by key national officials concerning increased readiness actions taken by State and local governments during periods of increased tension. In addition, the system provided significant information concerning public response to these activities throughout the Nation.

The system has been designed for State and local reporting of information each evening during periods of increased tension. The information is relayed to key national, regional, and State officials by early next morning.

Policy and Operational Guidance

Federal Civil Defense Guide (FCDG).—The standard OCD publications medium for issuing official civil defense policy and operational guidance to State and local governments, to other Federal agencies—including the military services—and to industry and organizations is the Federal Civil Defense Guide. This publication brings together the results of applicable Office of Civil Defense research programs, field tests, operations analyses, and cost data as well as legal and fiscal considerations and, in the light of field experience, conveys doctrine, techniques, and systems for practical use in Federal, State, and local civil defense programs. As portions of this OCD publications series are printed, they are released for controlled distribution to OCD regional offices and to Federal, State, and local offices. Other publications of an operational or program nature are keyed to the Guide. During fiscal year 1967, 25 separate publication items were issued as part of the FCDG, and four additional publications keyed to specific parts of it were completed and distributed.

Subjects covered in new FCDG issuances included, but were not limited to (1) *Principles of Civil Defense Warning and Public Outdoor Warning Systems*, (2) *Direction and Control of Emergency Operations*, (3) *Emergency Communications and Communications Planning Techniques and Procedures*, (4) *Financial Assistance for Emergency Communications (Equipment)*, (5) *Policy on the National Goal for a Minimum Protection Factor of 40 for Public Fallout Shelters*, and (6) *Local Civil Defense Program Papers and Progress Reports for Fiscal Year 1968*.

Emergency Operations Systems Development (EOSD).—This program bridges the gap between research and operation. The work is generally carried out in two phases. Phase I work includes distillation of relevant existing research; quantitative evaluation of problems resulting from light, medium, and heavy attacks; analyses of existing State and local capability to cope with these problems; and recommendations based on cost-effectiveness analysis of Federal-State-local programs concluded to be necessary. Phase II work includes field testing, as necessary; production of recommended guidance materials; development of detailed training requirements; and development of recommended management techniques for local operational systems.

People, facilities, equipment, and supplies are the basic ingredients of State and local systems. The EOSD program seeks to provide

the systems which will mix all of these ingredients in the most economical and effective ways.

During fiscal year 1967, emphasis was directed to developing systems for the orderly increase of civil defense readiness in periods of heightened international tension, and to providing guidance to State and local governments on actions which may be taken during such a period. Specific projects during the year included the following:

Fire.—Several components of the Austere Nuclear Fire Defense System are being developed. The first, the Self-Help Emergency Firefighting Training Kit, was completed. It is to be provided to local fire departments for training the public in fire defense skills applicable at home or in public fallout shelters.

Public Works Engineering.—Under an EOSD project the need for engineering support for decontamination, fire defense, and rescue operations was determined. As a result of these findings, OCD budgeting for preparation of guidance materials for State and local governments on emergency operations of local engineering departments was started.

Rescue.—Based on the findings and conclusions of the EOSD studies, OCD was developing guidance materials to help State and local governments prepare for rescue operations in defense emergencies. The draft guidance materials are to be tested in selected communities which have completed community shelter plans.

CSP shelter allocation using computer techniques.—This project was started in fiscal year 1967 to develop an integrated computer model that would make it possible to perform community shelter allocation while considering major traffic constraints. The use of computers rather than manual techniques by local CSP planners would aid in updating CSP shelter allocation plans where shelter inventory and population changes have occurred.

Radef Task (Phase II).—The second phase of a study of the radiological defense system, which is an evaluation of its adequacy, was started by conducting a series of exercises in an urban area, in a county having a medium-size county seat, in several towns or villages, and in an urbanized area composed of several incorporated jurisdictions.

Military support.—Study of the specific requirement that civil authorities might place on the military during a civil defense emergency and how State and local authorities could most effectively request military support was continued during the year.

Shelter management.—During the year, OCD published *Handbook for Fallout Shelter Management*, H-16, which is being used for training purposes along with other guidance materials suitable for placement in community fallout shelters.

Emergency manning.—A contract was negotiated with a private research company and work was started to identify and assess the emergency period manpower and material support capability, availability, and organizational effectiveness of 100 selected national voluntary agencies, nongovernment organizations, and professional associations. Support is required to augment the Emergency Welfare Services in performing their assigned emergency functions.

Health-Medical (Phase II).—Negotiation of a contract with a private research company was in process at the end of the fiscal year. It is to provide for the preparation and field testing of guidance material related to the development of local plans and programs for essential nonmedical support to the health and medical service in time of emergency. In addition, the contract is to include the testing of this guidance material in six communities.

Other Technical Assistance and Guidance

Readiness exercises.—In the fall of 1966, more than 1,600 local governments, 47 States, and the District of Columbia participated in an OCD-conducted civil defense readiness exercise *CDEX-66*. Although a number of Federal agencies took part in this exercise at headquarters and in the field, the emphasis was at State and local levels.

Significant features of *CDEX-66* were the review and evaluation of plans for increasing readiness during a period of heightened international tension, and of plans and procedures for emergency operations following a nuclear attack. The exercise also provided training for Government personnel in carrying out their responsibilities under emergency conditions. Included among the exercise activities carried out by participants, at all levels of government, were alerting of emergency staffs, analysis of effects of the simulated attack, situation reporting, activation and operation of emergency headquarters, and making decisions necessary to meet the problems arising out of the hypothetical attack situation.

OCD participated at both national and regional levels in a national military exercise held during the year. Military and civilian officials were given valuable experience in implementing current plans for mutual military-civilian support in emergencies, and were provided a basis for evaluating and improving these plans.

In addition, OCD participated in the quarterly command post exercises conducted by the North American Air Defense Command (NORAD). These exercises provide a vehicle for the realistic testing of the OCD Federal agency alerting system at headquarters and in the field, and procedures for internal staff alerting. This fiscal year, these exercises were also used to practice procedures for the exchange of attack information between the OCD and NORAD regions.

By the end of the fiscal year, plans were well underway for *CDEX-67*. This exercise will be conducted in conjunction with a national military exercise.

Military Standby Reserve officers.—The assignment of civil defense duties to Standby Reserve officers began in fiscal year 1962, when the Secretary of Defense authorized retirement credit for voluntary participation in civil defense work. By the end of fiscal year 1967, State and local civil defense directors had requested the services of 7,893 officers. However, only 3,111 officers were available, and 2,333 of them received orders to participate in the civil defense program. Orders could not be levied in many instances because the officers were not located where their assistance was requested.

National Defense Transportation Association (NDTA).—During fiscal year 1967, an additional six local NDTA chapters made arrangements for the voluntary use of NDTA transportation facilities and personnel for civil defense purposes. This increased to 66 the number of metropolitan areas where these arrangements had been completed as a result of a fiscal year 1964 agreement between the NDTA and the Department of the Army, OCD. During the year several chapters conducted mock exercises and updated existing agreements. The Fairbanks, Alaska, chapter produced a film showing a simulated earthquake exercise at Nenana, Alaska.

Automatic Data Processing (ADP) system.—The OCD began to offer State and local civil defense organizations technical assistance in developing a generalized ADP system to provide information needed for daily management of their civil defense operations. The system developed for the District of Columbia was implemented in fiscal year 1967. Four other localities will be selected in fiscal year 1968 as field test sites, and the ADP system will be implemented at each of these locations for evaluation and review purposes. The system will be made available to any local or OCD user at the completion of these field tests.

TRAINING AND EDUCATION

Training and education activities of the OCD are designed to support nationwide civil defense operations by training required manpower at all levels of government and providing civil defense education to the public. Achievement of these goals involves training key leaders for planning and directing civil defense operations in major political subdivisions, training personnel in operational civil defense skills, and offering civil defense instruction to the public. The preparation of suitable training materials and the accomplishment of actual instruction are basic elements of these activities.

This part of the report identifies the major OCD training and education activities and outlines fiscal year 1967 progress. Federal financial

support of OCD-approved State and local training activities was closely related to this work.

Professional and Technical Training

Professional training of key leaders is primarily focused on planning and directing civil defense operations. Technical training of civil defense workers is mainly focused on the skills required to carry out these operations. The principal means used by the OCD to provide both types of training in fiscal year 1967 were the OCD Staff College, the extension divisions of 53 State universities and land-grant colleges, Army post facilities, and the Civil Defense Adult Education Program. In addition, OCD-produced training materials were used by local governments to train in such areas as police, rescue, and radiological defense.

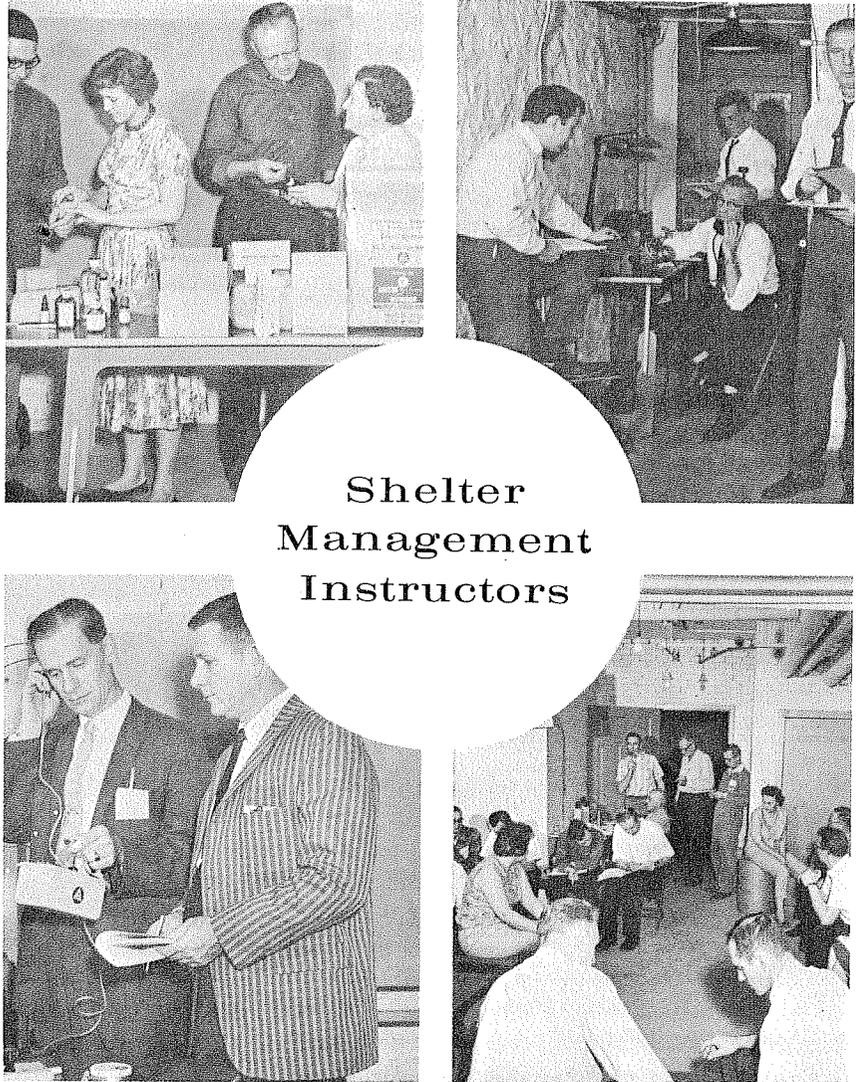
OCD Staff College.—Key Federal, State, and local civil defense personnel and others trained at the OCD Staff College, Battle Creek, Mich., totaled 2,842 for fiscal year 1967. This brings the number of graduates of OCD schools, since fiscal year 1960, to a cumulative total of 51,046. In addition to government officials, graduates included educators, industrial management officials, military personnel, and others with high levels of interest and responsibility in civil defense.

Courses offered during fiscal year 1967 included:

1. *Civil Defense Management*
2. *Industrial Civil Defense Management*
3. *Advanced Civil Defense Management*
4. *Shelter Management Instructor*
5. *Civil Defense Planning and Operations* (courses I, II, and III)
6. *Civil Defense Planning and Operations* (courses I and II—a special 2-week course)
7. *Radiological Monitoring for Instructors*
8. *Radiological Defense Officer*
9. *Community Shelter Planning* (separate workshops for urban planners and local officials)

Special courses, seminars, and workshops were conducted for support of Civil Defense Adult Education, the University Extension Programs, the U.S. Public Health Service, and Military Support of Civil Defense. Included in these special activities were a course in *Radiological Monitoring for Instructors*, an *Emergency Operations* laboratory, a *Conference Leaders'* workshop, a *Medical Self-Help* seminar, and a *Civil Defense Adult Education* seminar.

Under contract, the University of Tennessee developed and conducted the instruction in support of Community Shelter Planning. Among the fiscal year 1967 Staff College graduates were 515 who completed the workshop courses in *Community Shelter Planning*. Of these, 366 were urban planners and 149 were local civil defense officials.



Shelter Management Instructors

Figure 18.—Training at OCD Staff College.

Additional workshops and conferences for 439 State officials were conducted at OCD regional offices.

The University of Chicago, under continuing contracts, furnished professional support and consulting services to the Staff College faculty. This included a 5-day resident conference titled *Creating the Condition for Learning*, a 3-day conference *Evaluating Student Change*, and seminars in *Automatic Data Processing*, *Adult Education Methods and Techniques*, and *Library Development and Design*.

Other Staff College work included development of various training materials for use in civil defense courses and conferences in addition to providing technical advice and assistance for the development of training films to be used in training local civil defense personnel.

Civil Defense University Extension Program (CDUEP).—The extension divisions of land-grant colleges and universities, because of their experience in local communities and by reason of their facilities, have a unique capability for civil defense education and training. The CDUEP which began in fiscal year 1963, has two basic premises: (1) That civil defense education and training must be effectively carried on at the local level to achieve operational readiness, and (2) that civil defense education and training must make maximum use of existing instructional resources, thus avoiding the development of special facilities used only for civil defense. Under contracts with OCD, the extension divisions of the colleges and universities conduct conferences for Government officials, train instructors, and give professional training courses in local communities.

During fiscal year 1967, the CDUEP brought civil defense training to 55,106 State and local personnel, and a total of 189,112 persons have participated in the program since its inception. The program in fiscal year 1967 included contracts with 53 universities and colleges located in 50 States, the District of Columbia, and Puerto Rico.

Through 624 conferences, a total of 29,703 State and local officials, key community leaders, and personnel in business and industry were briefed on civil defense. A total of 5,759 instructors were trained in 357 classes: 2,867 in shelter management, and 2,892 in radiological monitoring. In addition, refresher training in radiological monitoring was given to 103 instructors in 11 classes. Training was given to 2,453 key staff personnel in 175 classes in *Civil Defense Management*, and 1,256 radiological defense officers received this training in 137 classes.

Training was conducted for 9,021 shelter managers in 484 classes, and for 3,759 radiological monitors in 265 classes. Also, 3,183 public officials were trained in 79 *Emergency Operations Simulation* exercises.

Contracts were negotiated during fiscal year 1967 for fiscal year 1968 training by institutions in 50 States, the District of Columbia, and Puerto Rico. These contracts provide for 546 conferences for public officials and 91 for executives in business and industry, as well as 149 classes for shelter manager instructors, 435 for shelter managers, 185 for radiological monitoring instructors, 239 for radiological monitors, and 142 for radiological defense officers; also, for 210 *Civil Defense Management* classes and 105 *Emergency Operations Simulation* exercises.

Continued interest and growth in the CDUEP indicates that State and local officials, as well as the general public, are experiencing an

increasing awareness of organizational and individual responsibility for meeting emergency needs. This positive response to the program has strengthened general confidence and participation in civil defense operations.

An evaluation of one aspect of the Civil Defense University Extension Program was started during the year by the University of Kansas under its support contract. Collection of data was begun for an in-house appraisal of the Emergency Operations Simulation Exercises (EOSE). These data will be evaluated to determine (1) costs and cost effectiveness of EOSE's, (2) the impact on local communities that can be directly related to the EOSE, and (3) whether or not EOSE is the best method to accomplish the specifically desired program objective.

Radiological monitor training by the Army.—Radiological monitors trained by the U.S. Continental Army Command (USCONARC) in fiscal year 1967 totaled 2,155, making a cumulative total of about 17,456 trained by CONARC since the beginning of the program in April 1963.

During fiscal year 1967, training in this OCD-sponsored program was conducted in 91 classes at nine of the 11 Army posts qualified to perform this training. The monitors are trained to help staff radiological monitoring stations and public fallout shelters.

Requests for the training originate at State and local levels and are directed into appropriate channels by OCD regional offices. Later, the Army post providing the training and the local civil defense officials agree upon schedules and training locations.

During fiscal year 1967, as in fiscal year 1966, requests for this training assistance have decreased due to the phasing out of this activity at some posts and the availability of monitor training under the Civil Defense Adult Education Program.

Explosive ordnance reconnaissance.—USCONARC continued to train local and State police in explosive ordnance reconnaissance. More than 5,000 were trained during fiscal year 1967, increasing the cumulative total to more than 50,000. More than 2,400 police were also trained in techniques for dealing with explosive and sabotage devices, increasing the number so trained to more than 13,500.

Public Education

Public school resources and those of other educational systems were used in support of the civil defense program during the year. This was accomplished by working with national education associations and by offering instruction on the program in the Civil Defense Adult Education and Medical Self-Help Programs.

National education associations.—Liaison with the national education organizations is the principal OCD means of meeting the need

for civil defense guidance requested by school officials and teachers. This demand continued to increase during the year as school personnel learned more about their civil defense responsibilities and the role of the schools in the nationwide shelter system. Major OCD activities, in response to the educators' interest in civil defense, included participation in the annual convention of the National Education Association held in July 1966 at Minneapolis, Minn., and the School and College Conference of the National Safety Council held in October 1966 at Chicago, Ill.

OCD work with national education organizations continued to focus on the development of fallout shelter space in school facilities and how to use it effectively in the community fallout shelter system.

During the year, a project was begun with the National Congress of Parents and Teachers to develop and publish a civil defense booklet and distribute it to organization members. The booklet will define clearly the role of the PTA organization in providing a safe environment for pupils and faculty through disaster preparedness in schools.

Civil Defense Adult Education Program (CDAEP).—The CDAEP is a means by which the Federal Government participates with State and local governments in informing citizens of protective measures that will enhance their chance of survival in the event of a disaster. This program provides adults with a basic understanding of civil defense and with information on individual, family, and community protection against the effects of nuclear weapons. The resources of the adult education system also are used to train selected adults to serve as radiological monitors and shelter managers for civil defense emergency operations. Through local, State, and Federal educational leadership and cooperation, *Personal and Family Survival* courses are made available to high school students and to out-of-school adults in communities throughout the country.

The Federal Government finances the CDAEP and is responsible for its overall planning and direction. The program is conducted mainly under the direction of chief State school officers through contracts with the Office of Education. In most cases, the chief State school officer delegates the responsibility to a State Civil Defense Adult Education Coordinator who also works with local school officials in recruiting and training teachers for these courses. Instructional materials are supplied by the Federal Government. State Civil Defense Adult Education staffs and local Civil Defense Adult Education teachers are paid with Federal funds.

Throughout fiscal year 1967, the CDAEP operated in a total of 49 States, the District of Columbia, and Puerto Rico. During the year, 419,806 adults satisfactorily completed the 12-hour *Personal and Family Survival* course, and 6,899 teachers were trained and certified to teach it. This brought the total number of graduates, including

teachers, to more than 2 million. In addition, a course in *Radiological Monitor Training* was offered in 41 States and Puerto Rico. A total of 2,128 classes were held, and 31,915 monitors were trained. This increased to 66,785 the number of monitors trained through the CDAEP since monitor instruction was first offered as part of the program in January 1965. Contracts in 20 States were modified late in fiscal year 1967 to provide *Shelter Management* courses under the CDAEP for fiscal year 1968.

Contracts were modified in the States of Massachusetts, Maine, and Texas to provide for the development, presentation, and evaluation of the *Personal and Family Survival* course as a television series to be presented during fiscal year 1968.

Under a contract agreement with the Systems Development Corporation, a program for evaluating the CDAEP was initiated during the year. The courses will be examined and evaluated for impact, content, length, instructor qualification, and applicability to local situations.

Medical Self-Help (MSH) training program.—Approximately 2.9 million persons were trained in this program during the year, making a total of about 5.9 million trained since this nationwide program was started in fiscal year 1963.

Developed for the OCD by the U.S. Public Health Service in cooperation with the American Medical Association, this program is designed to provide information and training that will help prepare the people of the United States to survive in the event of disaster, whether natural or man-made, when the services of a physician or other health professional are not available. Persons with this training would be needed in public fallout shelters and would be helpful in the event of peacetime disaster. The course is winning support in many fields. Schools, colleges, and hospitals are incorporating the course into their curricula; military organizations, veterans groups, and industrial firms are making ever-increasing use of it. The American Medical Association Council on Occupational Health sent a letter to all physicians in industry recommending that MSH be considered in their training schedules.

The first *Civil Defense Medical Self-Help* seminar was held at the OCD Staff College in April 1967 with a majority of the MSH State coordinators in attendance. The week's training provided important civil defense information to the coordinators, and offered an opportunity for exchange of experiences and techniques used for improving program effectiveness in individual States.

Community Shelter Planning (CSP) training program.—Activating the CSP program on a national scale requires training three distinct categories of people: (1) The urban planner, who produces the community shelter plan for the jurisdiction(s); (2) the civil

defense director for the local jurisdiction(s), who is responsible for the overall emergency operations plan based on the community shelter plans; and (3) the State CSP officer, who provides planning staff advice and assistance in the State to civil defense offices not covered by Federal CSP contracts.

Training that these individuals need is of two types: (1) Instruction on how to apply general planning techniques in community shelter planning, and (2) training in civil defense policy, programs, and planning.

OCD continued its CSP training by contract with the University of Tennessee, during fiscal year 1967, through workshops, conferences, and seminars. During the year, 356 persons were trained in 16 CSP workshops for urban planners, 149 persons were trained in eight CSP workshops for officials, 156 previously trained persons attended four conferences for planners, and 439 persons attended seven CSP seminars conducted at OCD regional offices for State civil defense staff members.

Rural Civil Defense

Started in fiscal year 1963, the Rural Civil Defense (RCD) program was continued in fiscal year 1967. This special civil defense information and education program for rural areas, managed by OCD under contract with the Field Extension Service of the U.S. Department of Agriculture (USDA), was carried on by over 11,000 extension agents at the county level and by approximately 3,200 agriculture specialists at the State level. Funds furnished under the contract enabled each State to have a full-time rural civil defense leader and resulted in provision by the USDA of a small supervisory and field liaison staff at the Federal level.

The rural civil defense information and education program conducted by the USDA has a potential audience of approximately 70 million people who live in rural areas and in communities of less than 10,000 population.

During fiscal year 1967, this program featured rural civil defense information on more than 10,000 television and radio broadcasts, in more than 3,600 county and State fair exhibits, in over 9,700 articles released to newspapers, and in over 2,700,000 copies of publications furnished to people in rural communities.

This program primarily explains how fallout protection can be provided on farms and in small communities, since most public fallout shelters are located in large cities. Special attention is given to the protection of livestock and feed, food products, and water. This includes evaluation of fallout protection available in farm buildings, and recommendations for improving it. Guidance and recommendations in these matters were provided to county agents and others during

fiscal year 1967 by USDA engineers assigned to eight State land-grant colleges.

Procedures for conducting fallout shelter analysis workshops were revised with the assistance of OCD personnel, and 722 people were trained through the 45 workshops held during the year.

More than 66,450 rural leaders participated in civil defense training and briefings. Working through Home Demonstration Clubs, 4-H Clubs, and other organizations, these leaders informed nearly 2.5 million persons about rural civil defense. This increased to about 4 million the number of persons who have been informed about civil defense since this part of the program became operational in fiscal year 1965.

Training Support Activities

As in previous years, OCD continued the development and production of training materials to support on-going training programs conducted by the Staff College, the Civil Defense University Extension Program, the Civil Defense Adult Education Program, local communities, and related military support training. Training materials included textbooks, instructor guides, student manuals, training films, slides and filmstrips, and pamphlets and leaflets.

During fiscal year 1967, 1,650 prints of the following training films, developed under contract with the Army Pictorial Center, were produced: *Community Shelter Planning Principles*, *Facts Make the Difference*, *Civil Defense Public Information*, *Manual Damage Assessment*, and *Decision Making*. These films, designed specifically for the civil defense training courses, were distributed to universities, States, OCD regions, and Army audio-visual centers.

Basic communication equipment was secured from National Guard units to enable universities to conduct simulations showing local community officials the displays, techniques, and procedures which can be used in conducting emergency operations. In support of the Emergency Operations Simulation Technique (EOST) training, 260 sets of emergency operations simulation exercise kits were prepared, of which 135 were used by the universities, and the remainder by the OCD Staff College in this training. These sets, consisting of 45 EOSE Operations Manuals, 15 EOSE Simulation Manuals, 350 Emergency Report Forms, 200 General Message Forms, 100 Radiation Report Forms, 150 Shelter Complex Loading Forms, 20 Unit History charts, and 100 Shelter Complex Data Forms, were introduced and used successfully in the field by the universities.

The Staff College revised the *Civil Defense Management Textbook and Student Manual*, of which 10,000 new copies were distributed for use in civil defense training packages during the fiscal year. These

packages, consisting of a textbook, instructor guide, student manual, and a set of slides, are used in OCD Staff College resident instruction and in instruction offered through the civil defense university extension program.

The new *Shelter Management Textbook* for training shelter managers was prepared under contract, and 250,000 copies were distributed to the universities and the Staff College. A total of 23,000 copies of the *Radiological Defense Textbook*, used in the training of radiological monitors, were reprinted because of depleted supply.

Home study courses were continued and expanded during the fiscal year to include the revision of *Civil Defense U.S.A.* which was prepared by the American Institutes for Research for those who have not had previous formal training in civil defense and who are assigned, or likely to be assigned, a civil defense duty or task. This includes, but is not limited to, new employees of Federal, State, and local governments, and newly enrolled civil defense volunteers. OCD, however, will use this course primarily for the orientation of new civil defense directors.

The National League of Cities, under OCD sponsorship undertook a study to identify training programs that are made available to local government employees and officials by local and State governments, universities, and national associations. This study provided OCD with a national inventory of 3,500 municipal training courses, and a nationwide summary of State statutes and significant local enactments pertaining to, or affecting, local training. The on-going study by the National League of Cities has two objectives:

First, developing recommendations and procedures to integrate civil defense training into local government training programs; and

Second, implementing procedures for keeping the local government training program inventories and catalogs current and making them readily available to potential users.

FINANCIAL ASSISTANCE

Throughout fiscal year 1967, the OCD continued to provide Federal matching funds to States, territories, and possessions in accordance with the *Federal Civil Defense Act of 1950*, as amended. Recipients of these funds submitted program papers and progress reports showing specific objectives, activities, and accomplishments of State or local civil defense operations.

OCD Federal financial assistance is subject to Title VI of the *Civil Rights Act of 1964*. Under the Department of Defense and OCD regulations, each State must furnish a *Statement of Compliance with Methods of Administration* and each subdivision receiving assistance, an *Assurance of Compliance*. These are conditions for receiving

further financial assistance. Statements of compliance were received from all States, and by June 30, 1967, assurances had been received from approximately 7,400 subdivisions.

Approximately \$10.9 million was obligated during fiscal year 1967 for civil defense supplies, equipment, training, and emergency operating centers. (See table 7.) Over \$5.9 million of this total was for emergency operating centers. Other obligations were mainly for communications and warning equipment and for training activities.

To help State and local governments pay essential personnel and administrative expenses, the OCD made available approximately \$17.4 million. All States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and 1,848 of their political subdivisions participated in this program in fiscal year 1967. (See table 8.) State and local employment supported by these funds is required to be under a merit system satisfying Federal standards. The number of participating political subdivisions in fiscal year 1967 was over 11 percent greater than that of the preceding year. The number of State and local employees performing civil defense functions totaled 5,815, an increase of nearly 1,000 since the end of fiscal year 1966.

The program for partial reimbursement of travel and per diem expenses of students attending OCD schools was continued to encourage training of State and local civil defense personnel. Course completion certificates issued to students reimbursed under this program during fiscal year 1967 totaled 498, and the amount reimbursed was \$40,243. Cumulative expenditures since this program was started in fiscal year 1960 totaled \$687,916, and a cumulative total of 11,365 completion certificates had been issued.

TABLE 7.—Fiscal year 1967 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers

Area	Amounts obligated ¹		
	Total	Supplies, equipment, and training	Emergency operating centers
Total.....	\$10, 883, 489	\$4, 912, 954	\$5, 970, 535
REGION ONE.....	2, 964, 672	1, 324, 949	1, 639, 726
Connecticut.....	80, 709	62, 799	17, 910
Maine.....	197, 509	180, 282	17, 228
Massachusetts.....	166, 184	73, 854	92, 329
New Hampshire.....	43, 897	38, 969	4, 930
New Jersey.....	92, 917	64, 876	28, 041
New York.....	2, 253, 643	824, 684	1, 428, 960
Rhode Island.....	22, 774	13, 626	9, 149
Vermont.....	26, 573	26, 427	145
Puerto Rico.....	63, 397	39, 406	23, 991
Virgin Islands.....	17, 069	26	17, 043
REGION TWO.....	872, 358	378, 721	493, 637
Delaware.....	33, 647	5, 623	28, 024
District of Columbia.....	13, 888	4, 620	9, 268
Kentucky.....	37, 057	31, 203	5, 854
Maryland.....	87, 588	33, 871	53, 718
Ohio.....	62, 863	45, 753	17, 110
Pennsylvania.....	334, 542	237, 942	96, 600
Virginia.....	248, 653	12, 359	236, 293
West Virginia.....	54, 120	7, 350	46, 770
REGION THREE.....	1, 173, 232	242, 269	930, 958
Alabama.....	293, 069	34, 394	258, 675
Florida.....	230, 724	28, 421	202, 302
Georgia.....	118, 846	51, 575	67, 270
Mississippi.....	331, 840	42, 564	289, 275
North Carolina.....	85, 066	49, 089	35, 975
South Carolina.....	59, 710	15, 543	44, 167
Tennessee.....	53, 977	20, 683	33, 294
Canal Zone.....	0	0	0
REGION FOUR.....	1, 245, 643	666, 481	579, 160
Illinois.....	253, 706	147, 418	106, 287
Indiana.....	22, 906	21, 274	1, 632
Michigan.....	117, 934	82, 415	35, 519
Minnesota.....	330, 101	238, 629	91, 472
Wisconsin.....	520, 996	176, 745	344, 250

See footnote at end of table.

TABLE 7.—Fiscal year 1967 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers—Continued

Area	Amounts obligated ¹		
	Total	Supplies, equipment, and training	Emergency operating centers
REGION FIVE.....	915, 483	442, 371	473, 114
Arkansas.....	168, 145	100, 203	67, 942
Louisiana.....	132, 378	62, 390	69, 988
New Mexico.....	5, 490	3, 549	1, 941
Oklahoma.....	285, 981	177, 015	108, 967
Texas.....	323, 489	99, 214	224, 276
REGION SIX.....	1, 728, 691	1, 124, 417	604, 272
Colorado.....	226, 395	131, 291	95, 105
Iowa.....	308, 146	222, 716	85, 430
Kansas.....	213, 436	179, 150	34, 286
Missouri.....	457, 363	373, 161	84, 202
Nebraska.....	156, 831	59, 600	97, 231
North Dakota.....	43, 130	43, 098	31
South Dakota.....	315, 138	109, 239	205, 898
Wyoming.....	8, 252	6, 162	2, 089
REGION SEVEN.....	1, 722, 787	657, 486	1, 065, 301
Arizona.....	140, 827	28, 506	112, 323
California.....	1, 390, 755	513, 583	877, 171
Hawaii.....	143, 249	77, 457	65, 793
Nevada.....	28, 618	27, 957	660
Utah.....	19, 338	9, 983	9, 354
American Samoa.....	0	0	0
Guam.....	0	0	0
REGION EIGHT.....	260, 626	76, 258	184, 368
Alaska.....	26, 628	17, 852	8, 775
Idaho.....	56, 116	19, 651	36, 465
Montana.....	85, 443	2, 507	82, 936
Oregon.....	25, 643	5, 467	20, 176
Washington.....	66, 796	30, 781	36, 016

¹ Figures may not add to exact totals due to rounding.

TABLE 3.—*Fiscal year 1967 Federal contributions for civil defense personnel and administrative expenses*

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
Total.....	\$17, 376, 500	1, 848	5, 815
REGION ONE.....	5, 096, 048	295	1, 505
Connecticut.....	234, 737	22	71
Maine.....	241, 066	55	116
Massachusetts.....	610, 837	46	189
New Hampshire.....	64, 648	15	35
New Jersey.....	467, 501	52	184
New York.....	3, 043, 470	33	692
Rhode Island.....	110, 197	8	39
Vermont.....	47, 772	4	17
Puerto Rico.....	260, 755	60	158
Virgin Islands.....	15, 065	0	4
REGION TWO.....	1, 833, 759	180	706
Delaware.....	86, 630	4	34
District of Columbia.....	124, 022	0	28
Kentucky.....	185, 825	36	88
Maryland.....	389, 336	20	117
Ohio.....	244, 301	21	91
Pennsylvania.....	518, 402	49	211
Virginia.....	195, 350	30	88
West Virginia.....	89, 893	20	49
REGION THREE.....	2, 539, 889	345	946
Alabama.....	377, 000	58	139
Florida.....	539, 114	52	192
Georgia.....	517, 000	88	205
Mississippi.....	179, 921	40	84
North Carolina.....	433, 100	50	147
South Carolina.....	281, 304	32	98
Tennessee.....	212, 450	25	81
Canal Zone.....	0	0	0
REGION FOUR.....	1, 924, 353	335	732
Illinois.....	400, 000	71	164
Indiana.....	143, 269	19	49
Michigan.....	466, 159	66	136
Minnesota.....	471, 700	111	218
Wisconsin.....	443, 225	68	165

TABLE 8.—Fiscal year 1967 Federal contributions for civil defense personnel and administrative expenses—Continued

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
REGION FIVE.....	1, 275, 890	161	472
Arkansas.....	233, 327	36	90
Louisiana.....	341, 469	15	106
New Mexico.....	83, 000	7	23
Oklahoma.....	218, 094	39	93
Texas.....	400, 000	64	160
REGION SIX.....	1, 143, 652	313	552
Colorado.....	153, 299	29	62
Iowa.....	192, 000	46	87
Kansas.....	162, 216	53	91
Missouri.....	201, 500	49	96
Nebraska.....	159, 277	33	71
North Dakota.....	115, 325	47	61
South Dakota.....	107, 088	36	59
Wyoming.....	52, 947	20	25
REGION SEVEN.....	2, 827, 219	124	660
Arizona.....	191, 860	22	72
California.....	2, 212, 498	80	483
Hawaii.....	193, 575	4	37
Nevada.....	135, 402	11	36
Utah.....	75, 790	7	25
American Samoa.....	1, 323	0	2
Guam.....	16, 771	0	5
REGION EIGHT.....	735, 690	95	242
Alaska.....	120, 000	3	21
Idaho.....	87, 000	24	48
Montana.....	134, 500	39	58
Oregon.....	84, 683	11	27
Washington.....	309, 507	18	88

SURPLUS PROPERTY

Public Law 655, 84th Congress, authorized the donation of Federal surplus property for use in any State for civil defense purposes. Since the program was started in fiscal year 1957, property having an acquisition cost of approximately \$375.0 million has been transferred to State and local governments. Federal surplus property valued at approximately \$27.6 million was donated to the State and local gov-

ernments during fiscal year 1967. (See table 9.) Recipients of these property donations during the year were required to submit the same type of program papers and reports as those required of recipients of Federal matching funds.

TABLE 9.—Federal surplus property transferred to State and local governments for civil defense purposes

[In thousands of dollars]

Area	Acquisition cost of transferred property ¹	
	Fiscal years 1957 through 1967	Fiscal year 1967
Total.....	\$374, 955	\$27, 591
REGION ONE.....	63, 499	3, 862
Connecticut.....	6, 778	435
Maine.....	8, 561	559
Massachusetts.....	16, 904	1, 451
New Hampshire.....	2, 894	206
New Jersey.....	11, 595	578
New York.....	10, 348	179
Rhode Island.....	2, 794	187
Vermont.....	1, 190	139
Puerto Rico.....	2, 435	127
Virgin Islands.....	0	0
REGION TWO.....	32, 064	1, 899
Delaware.....	495	13
District of Columbia.....	0	0
Kentucky.....	4, 134	309
Maryland.....	6, 247	415
Ohio.....	4, 709	238
Pennsylvania.....	9, 205	383
Virginia.....	4, 988	138
West Virginia.....	2, 287	403
REGION THREE.....	82, 084	7, 431
Alabama.....	12, 336	863
Florida.....	19, 320	1, 425
Georgia.....	19, 031	2, 086
Mississippi.....	11, 028	1, 248
North Carolina.....	11, 492	601
South Carolina.....	4, 332	600
Tennessee.....	4, 544	607
Canal Zone.....	0	0

See footnote at end of table.

TABLE 9.—Federal surplus property transferred to State and local governments for civil defense purposes—Continued

Area	Acquisition cost of transferred property ¹	
	Fiscal years 1957 through 1967	Fiscal year 1967
REGION FOUR.....	44, 631	2, 714
Illinois.....	12, 415	980
Indiana.....	5, 451	121
Michigan.....	19, 116	1, 406
Minnesota.....	4, 906	94
Wisconsin.....	2, 744	114
REGION FIVE.....	46, 816	4, 342
Arkansas.....	7, 196	328
Louisiana.....	11, 561	1, 088
New Mexico.....	1, 345	151
Oklahoma.....	6, 375	857
Texas.....	20, 338	1, 918
REGION SIX.....	25, 333	2, 174
Colorado.....	5, 697	476
Iowa.....	2, 250	279
Kansas.....	1, 872	109
Missouri.....	5, 687	383
Nebraska.....	1, 625	7
North Dakota.....	2, 300	164
South Dakota.....	3, 149	230
Wyoming.....	2, 753	527
REGION SEVEN.....	64, 932	4, 019
Arizona.....	3, 116	274
California.....	51, 471	2, 494
Hawaii.....	679	120
Nevada.....	2, 703	301
Utah.....	6, 962	830
American Samoa.....	0	0
Guam.....	0	0
REGION EIGHT.....	15, 596	1, 150
Alaska.....	1, 617	74
Idaho.....	2, 962	245
Montana.....	916	95
Oregon.....	3, 020	168
Washington.....	7, 081	568

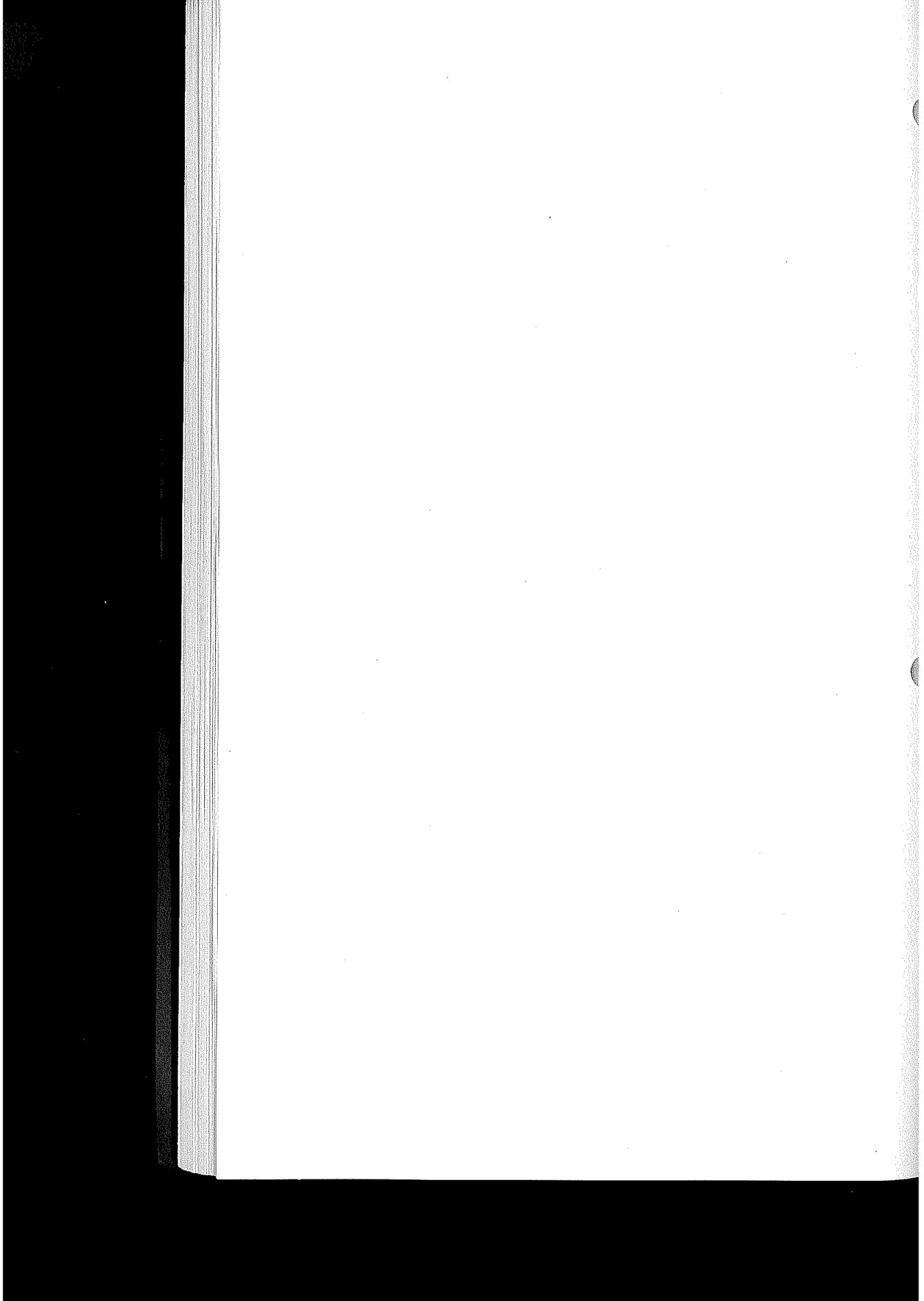
¹ Figures may not add to exact totals due to rounding.

EMERGENCY SUPPLIES AND EQUIPMENT INVENTORY

Principal components of the emergency supplies and equipment inventory are forty-five 10-mile units of water pipe and pumping equipment maintained by the OCD for local use during natural disaster or postattack operations. Total value of the inventory was approximately \$6.9 million at the end of fiscal year 1967.

During the year, this equipment was loaned to 23 States for use in 78 communities to help overcome the persistent water supply problems in the Northeastern United States and the Mississippi River floods in the spring of 1967. Loans included an aggregate of 130 pumps and approximately 113 miles of pipe. At the end of fiscal year 1967, the equipment was still on loan to 13 States for use in 31 communities.

Procurement and management of emergency hospital and medical supply inventories for civil defense use are responsibilities of the Department of Health, Education, and Welfare in accordance with Executive Order 10958, effective August 14, 1961.



Part VI

RESEARCH

The major objective of the OCD research program is to develop information of many kinds required for decisions in the planning and execution of the national civil defense program. The constantly changing character of the international situation, together with new technological developments, creates a continuing need for searching out and evaluating alternative solutions to a great variety of civil defense problems. The research information generated finds application not only to policy and planning decisions, but also to improvement of operational systems and procedures and to the development of more economical hardware.

The program is carried out by entering into contractual agreements with government, educational, and private organizations. Selection of the most capable contractors, along with careful screening of studies to be made, have resulted in some noteworthy achievements, described elsewhere in this report. The percentages of funds committed to the various research groups during fiscal year 1967 and previous years were:

	Percent	
	Fiscal years 1962-66	Fiscal year 1967
Department of Defense (DoD)-----	18.9	14.2
Federal agencies, exclusive of DoD-----	14.4	7.8
Educational institutions-----	8.0	10.8
Private organizations, including industrial laboratories, research institutes and foundations, and quasi-govern- ment agencies-----	58.7	67.2
Total -----	100.0	100.0

Functional categories.—In fiscal year 1967, 94 percent of the \$10 million made available was programed for research in four functional categories. The balance was used to obtain technical advisory management and support services from lead laboratories to aid in managing selected areas of research. (See table 10.) The breakdown of funds for research and services follows:

	Percent
Shelter -----	29.5
Support systems-----	21.3
Postattack -----	19.8
Systems evaluation-----	23.4
Management and support services-----	6.0
Total -----	100.0

TABLE 10.—Research funds programed, committed, and obligated fiscal year 1967 appropriations

Type of research (category and project)	Programed	Committed	Obligated
Total.....	\$10, 000, 000	\$9, 999, 166	¹ \$9, 649, 404
Shelter.....	2, 954, 500	2, 953, 559	2, 792, 272
Protection studies.....	1, 031, 500	1, 031, 500	900, 005
Shelter environment.....	378, 000	378, 000	351, 802
Subsistence and habitability.....	145, 000	145, 000	144, 896
Component development.....	195, 000	195, 000	195, 000
Shelter management.....	605, 000	603, 333	603, 469
Shelter systems.....	600, 000	600, 726	597, 100
Support systems.....	2, 128, 000	2, 122, 298	2, 070, 771
Monitoring systems.....	222, 000	222, 000	222, 000
Communications and warning.....	350, 000	350, 000	350, 000
Reduction of vulnerability.....	60, 000	60, 000	10, 000
Emergency medical research.....	260, 000	260, 000	260, 000
Fire effects and protection.....	825, 000	817, 500	817, 500
Emergency operations.....	411, 000	412, 798	411, 271
Postattack.....	1, 978, 000	1, 979, 038	1, 875, 551
Radiological phenomena and effects.....	610, 000	610, 000	610, 000
Radiological countermeasures.....	305, 000	305, 240	305, 240
Repair, reclamation of damage.....	457, 000	456, 984	456, 816
Postattack medical, health, and welfare.....	170, 000	170, 000	170, 000
Recovery and maintenance systems.....	436, 000	436, 814	333, 495
Systems evaluation.....	2, 337, 500	2, 342, 260	2, 305, 778
CD systems analysis.....	1, 090, 000	1, 094, 760	1, 060, 714
Strategic analysis.....	50, 000	50, 000	50, 000
Vulnerability and requirements.....	595, 000	595, 000	593, 315
Organization and training.....	37, 500	37, 500	37, 129
Planning support.....	80, 000	80, 000	80, 000
Information systems analysis.....	0	0	0
Physical environment studies.....	50, 000	50, 000	50, 000
Social and psychological.....	435, 000	435, 000	434, 620
Management and support.....	602, 000	602, 011	605, 032

¹ An additional \$796,360 was obligated in fiscal year 1967 from earlier appropriations for research and development projects approved in prior years.

The research program is designed so that each of the four research categories contributes to the flow of scientific information for improving the planning and operation of the civil defense program. Each category also provides data for the continuing examination of those alternative civil defense systems showing greatest promise.

For the past 2 years a research effort of some magnitude has been underway involving a comprehensive analysis of hypothetical attack effects and effectiveness of civil defense countermeasures. By means of a system of coordinated studies carried out in each of the four research categories, using assumed attacks on five selected urban localities, large amounts of technical data are being acquired. This effort shows promise of improving methods of analyzing attack effects and civil defense planning, as well as providing guidance for establishing future research requirements.

SHELTER

Shelter research in fiscal year 1967 yielded significant information that will lead to more effective use of the national fallout shelter system. Advances were made in understanding the structural and space characteristics of fallout shelters, the environmental conditions necessary for habitability, and the water, food, and medical needs of shelter occupants. Shelter equipment studies show that ventilation and lighting can be accomplished effectively and at low cost for the types of space in the present inventory. Steady progress was made in understanding the social behavior and management problems of shelter occupants, and improved procedures were developed for evaluating the effectiveness of the shelter system when used in various ways.

Several experimental radiation shielding studies were completed that will permit more accurate determination of the radiation protection afforded by the many types of shelter in the present inventory. A continuing search was made to identify the types and distribution of future construction into which protective space could be incorporated.

In order to better evaluate the protection offered by shelters subjected to direct effects, an experimental test facility was developed, blast testing procedures were devised, and typical panels for fallout shelters were built and prepared for testing. Independent studies were continued to develop an analytical framework for understanding the test results in order to provide input to evaluation procedures. These procedures simultaneously vary cost, effectiveness, shelter posture, and attack environment in order to define the most effective means for future development and use of the shelter system.

Specific study was directed to the various effects of high temperatures in shelters, including the rate and physiological process of body heat loss and of dehydration accompanying loss of body fluids.

The largest shelter occupancy studies to date—with 500 and 750 men, women, and children—were conducted. Emphasis of the studies was on problems and methods of organization and management of large shelters with a number of rooms. The need for revising a research prototype shelter-management handbook became apparent when volunteers used it as an aid to shelter living. Subsequent changes made in the handbook improved it. New instructions for setting up packaged ventilation kit units were prepared, tested with a number of groups, and found to be much more effective than instructions provided previously. A brief prototype guidance document on how to select and recruit shelter managers was used successfully during field demonstrations in communities.

SUPPORT SYSTEMS

Principal subjects of support systems research concern emergency operations before, during, and immediately after attack. Studies conducted during fiscal year 1967 included various aspects of warning, communications, radiological monitoring, management and control of emergency operations, vulnerability reduction, fire protection, and emergency medical care.

Studies and analyses were made of the information requirements for radiological monitoring systems. Research was also conducted with a view to developing new and better radiological monitoring instruments as well as improving those on hand. An investigation, completed during the year, indicated the feasibility of using low-cost silicon detectors for high energy gamma rays, with a possibility also for their application to low energy rays. Another study used sunlight as the sole power source for a meter and was proven out at rates of 5 or more roentgens per hour. Research designed to increase its sensitivity to lower rates is continuing. Other projects included investigation of the basic principles of Geiger-Mueller tube design; studies of the power requirements of certain OCD instruments; and work on improving fallout prediction effectiveness, including determination of data requirements.

Initial studies were completed on the development of techniques to determine communications requirements at local, State, and regional levels for the purpose of conveying and processing information during emergency operations. Results of these studies will determine basic circuit requirements and the engineering design of suitable equipment for communications systems. Evaluation of a recently developed working model Emergency Operations Center display device to assist decisionmakers in processing emergency information was started. Progress was made in developing methods of evaluating the capability of communications systems to support emergency operations during and after an attack. Feasibility and cost analysis studies were continued on possible alternate communications methods and

procedures in case of destruction or blackout by fire, electromagnetic pulse or other weapons effects.

Warning requirement studies showed that the total system must receive primary emphasis, and that requirements for components must be judged in terms of how they fit into the total warning system. The technology for creating system components that may be required is already available. Studies of local warning systems were continued to assure an appropriate mix of these systems in terms of reliability, redundancy, and credibility. The development and design of a nationwide radio warning system utilizing low frequency transmitters was pursued to a state suitable for implementation consideration.

Damage-limitation studies of the petroleum, petrochemical, steel, and aluminum industries indicated that rapid shutdown of plants can reduce danger to operating personnel and prevent damage or destruction to the industrial facilities that might otherwise result. Exceptions would be steel plants having blast furnaces and coking ovens.

Emergency operations research led to issuance of a *Concept of Emergency Operations Under Nuclear Attack* which, when implemented, will make it possible to plan effectively for operations to protect populations not only against fallout, but also against fire and associated effects of nuclear attack.

Emergency medical research included studies of austere treatment of burns, trauma, radiation sickness, and other injuries. Studies for predicting the number of urban casualties from a nuclear attack were continued. The information produced by these studies provides data describing expected casualties, and these data can be used as a basis for estimating the kinds of medical support needed during an emergency. Work was completed on the development of an operational concept for emergency medical command and communications that would be effective during the postattack periods. A study was continued describing and comparing the acute and late effects of protracted low dose rate gamma radiation on large domestic animals in terms of injury and recovery, as reflected in lifespan and in hematological and other physiological alterations. Work continued on the evaluation of the possibility of producing an effective nonnarcotic, nonaddictive, pain-relieving drug.

Fire effects, fire prevention and control, and thermal radiation and fire countermeasure research continued to improve the defensive posture through the development of techniques, information, and systems to counteract mass fire damage. (See fig. 19.) A thermal-absorption smoke screen system developed earlier was evaluated as a countermeasure against the prompt thermal energy from present nuclear threats. A prototype infrared fire detection and mapping system previously developed was evaluated for its operational flexibility. Parametric and operational analyses established concepts and techniques for fire defense, rescue, and hazards to life.

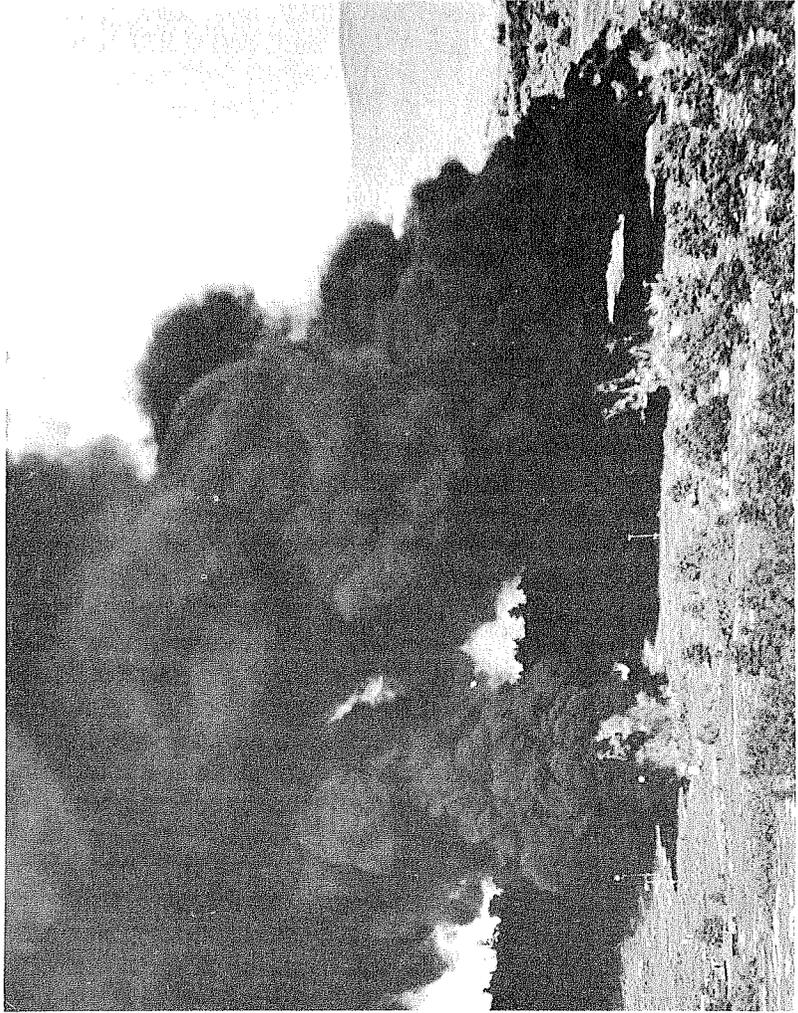


Figure 19.—Research exercise in fire effects, prevention, and control.

POSTATTACK

Sustaining the population that would survive nuclear attack and providing emergency measures for restoring vital services and facilities continued to be the principal subjects of postattack research. During the fiscal year, the effort devoted to analysis of management and organization was substantially increased. This included analysis of functional manpower, information requirements for all postattack countermeasures, and the management techniques and procedures that would be appropriate. A method for identification of critical skills was developed associating preattack employment patterns with postattack recovery capabilities. Because of the closely allied interests and responsibilities of the Office of Emergency Planning (OEP), a number of these research contracts were jointly funded by OEP and OCD.

A computer program was developed and applied to generate fallout histories for any specified point in a fallout pattern. This, for the first time, provides a complete chronological history of fallout arrival, buildup, and decay from single or multiple bursts. Accomplishments in radiological decontamination research included development of computer models for estimating decontamination needs, logistics requirements, and crew doses. Fallout simulants with specified chemical and radiological characteristics were produced for decontamination studies, and for animal and plant experiments.

An improved data base for estimating casualties expected from nuclear attack was developed. In cooperation with the Atomic Energy Commission, all available information on the Japanese nuclear casualties was analyzed by injury type, location, and type of structure. These analyses were coded for computer application. As a result, better estimates can be made of total mortality and injuries to be expected from a nuclear detonation, as well as injuries, by type, for different shielding categories.

The potential impact of thermonuclear war on social institutions was investigated through application of the case-study technique to the institution of higher learning. A more comprehensive method for forecasting the composition of the surviving society in a postattack environment was developed in addition to a system for applying the method to specific locations under specific attack conditions. Studies in demography of survivors and their basic welfare and health problems were continued.

SYSTEMS EVALUATION

This research is directed to the evaluation of systems that would decrease loss of life and property and increase the capability to recover from enemy attack. It is designed to identify more precisely and

objectively the elements to be considered in selecting alternative civil defense systems.

Systems evaluation studies in fiscal year 1967 continued to explore the feasibility of various civil defense measures which could be implemented during periods of heightened international tension. These studies were designed to provide a range of crisis-oriented civil defense actions to deal with crisis situations of several days' to several weeks' duration. Study continued on the interaction of civil defense with active defense in an attempt to demonstrate a method for defining the preferred civil defense postures to accompany several different deployments of active defense systems. Scenarios for many possible civil defense postures were developed which would provide planners with several options in case of war buildup.

Development of more effective techniques for local and nationwide evaluation of civil defense systems was continued. Local systems analysis was emphasized in studies of five selected cities. An information flow system, Program Evaluation Review Techniques (PERT), for direction and correlation of these studies was designed, and efforts to combine existing local systems were initiated. A working model was developed for allocating open space to competing cities for dispersal of populations in a geographical region larger than a metropolitan area. Studies for protection of nationwide economic resources progressed satisfactorily.

Studies of special threats as well as indirect effects of thermonuclear attack were continued during the fiscal year. Research in the area of vulnerability and requirements of people and resources, production, distribution, and other economic and social systems produced data needed to develop methods for deriving civil defense performance requirements. Studies were initiated on the vulnerability of gas, electric, and water distribution systems. A study was completed on the design of a method for assessing the total vulnerability of people, institutions, and other resources of the United States to nuclear attack.

Two studies were completed in the area of organization and training: one concerning the evaluation of alternative patterns of assignment of authority in civil defense activities; the other, the development of effective training programs at the State level.

Public attitude survey data analyzed and reported during fiscal year 1967 indicated that some 87 percent of the population responding had favorable reactions toward the current civil defense program. Research continued to improve techniques for developing data and methods for predicting public acceptance and response to civil defense programs and the manner in which attitudes affect civil defense readiness.

Part VII

SUPPORTING ACTIVITIES

In addition to the nationwide fallout shelter system and the complementary civil defense systems, the civil defense program includes several important supporting activities or programs. These activities are necessary to stimulate the public's awareness of civil defense, to keep the public informed regarding it, to gain and maintain the understanding and support of industry and national organizations, and to provide nationwide and worldwide perspective to the civil defense program. Major activities that contribute to this support are discussed in this part of the report.

EMERGENCY PUBLIC INFORMATION

Emergency Public Information activities during fiscal year 1967 were principally of two types: First, those designed to provide the public with authoritative information during emergencies, when coordinated action of Federal, State, and local governments would be required; and second, those designed to support the peacetime civil defense program.

Emergency Public Information workshops.—These workshops were held in OCD Regions One, Three, Four, and Eight during fiscal year 1967, and plans were made for conducting similar workshops in the other four OCD regions during fiscal year 1968. The primary purpose of the workshops is to help local civil defense directors determine which public information resources would be available to them for use in an emergency. In addition, the workshops demonstrate how to use these resources and how to highlight procedures that should be followed to provide the public with accurate official information during an emergency.

The workshops were conducted under contract for the OCD by the U.S. Civil Defense Council (USCDC). The USCDC is a nongovernmental organization whose members are civil defense directors in towns, cities, and counties throughout the United States.

Community Shelter Planning (CSP).—During fiscal year 1967, the OCD continued to provide guidance to State and local governments on the public information aspects of community shelter planning. This included reviewing and approving the public information aspects of individual plans.

It is part of the community shelter plan to provide the people with information and guidance on what they should do in the event of a nuclear emergency. Normally, this information includes a special map showing (1) the location of public fallout shelters, (2) areas to which specific shelters are allocated, and (3) routes to shelters and means of getting there. In addition, information and guidance materials on improvising fallout shelter are provided to people for whom public shelter space is unavailable or inaccessible.

Supporting Materials

Editorial planning activities.—The OCD continued to provide civil defense information support through materials issued as guidance to State and local governments and other organizations, as well as through fact sheets and editorial and illustrative material issued to newspapers, magazines, and other public media. Examples of subjects covered by fact sheets included large-scale shelter habitability studies, direct mail shelter development systems, the Home Fallout Protection Survey, and the construction of Federal regional centers.

The OCD developed informational material to support the *Home Fallout Protection Survey* (HFPS). A model information package developed for the West Virginia HFPS was made available to other States planning similar surveys.

During the year, 18 OCD *Information Bulletins* were issued to transmit information on national civil defense and related military defense policies to State and local governments. In addition, a constant flow of civil defense information to individuals, families, organizations, and public officials was maintained through interviews, conferences, and correspondence in response to individual inquiries and requests.

A new publication titled *Status of the Civil Defense Program*, MP-46, was developed and released in January 1967. Designed for quarterly updating, this new publication is distributed upon request to members of the Congress, to representatives of newspapers and other communications media, and to the public.

Motion pictures.—A new motion picture *A Hurricane Called Betsy* was released during fiscal year 1967. It is a 30-minute documentary of the devastating effects of the hurricane that struck Florida, Louisiana, and other Gulf coast States in 1965.

Production was also completed on three motion pictures to be printed and distributed in fiscal year 1968. The motion picture *Slanting* illustrates, by animation, shielding techniques that can be used by architects and engineers to incorporate fallout protection in planning new construction. *Briefly, About Fallout*, is an 8-minute presentation describing the basic nature of radioactive fallout, its dangers, and the protective measures that can be taken against it. Another 8-minute

motion picture *Once to Make Ready* is designed to be used on television programs and with special community shelter planning exhibits.

The Army Pictorial Center reported that 30,919 requests for OCD motion pictures were received during fiscal year 1967. Of more than 3,400 military and nonmilitary films available, the OCD film *Though the Earth Be Moved* was first and the OCD film *About Fallout* was second in the number of requests for films received from civilian sources.

Though the Earth Be Moved, a filmed documentary of the Alaskan earthquake of 1964, was designated a Festival Honors Award winner by the Educational Film Library Association at its 1967 American Film Festival; a similar honor was awarded this film at the 1966 San Francisco Film Festival. Another OCD film *The A + School* was given a Bronze Medal Award at the Sixth Annual International Film Festival.

A new motion picture catalog was prepared and released in fiscal year 1967, listing 30 current public information pictures. Forty thousand copies of the catalog were printed for distribution. Four new films were added, and three films were declared obsolete and deleted from the catalog.

Radio and television.—During fiscal year 1967, two new 30-second animated spot announcements on *Attack Warning Signals* were released to all television stations. After having served its purpose over a 6-year period, the weekly civil defense radio series *Stars for Defense* was discontinued. *Entertainment U.S.A.*, formerly carried on the Columbia Broadcasting Company network, and *Startime U.S.A.*, formerly carried on the American Broadcasting Company network, were also discontinued for the same reason.

It was necessary to procure an additional 100 television announcement kits on the Emergency Broadcast System to meet replacement requests from television stations.

COMMUNITY SERVICES

During fiscal year 1967, OCD continued to develop policies, activities, and program and guidance materials designed to gain maximum involvement in civil defense at the community level, with emphasis on the community shelter planning program, the Home Fallout Protection Survey, as well as all civil defense programs. Increased emphasis was placed on liaison and coordination with other elements of the Federal government, professional associations, institutions, and organizations. Elements of the constantly increasing body of sociopsychological knowledge on the involvement of leadership for community action were analyzed and applied to civil defense programs through the use of outside resources.

A series of publications for community resource groups includes *Community Family Service for Civil Defense*, H-11, *Community Involvement in Civil Defense*, H-11-A, and *Meetings That Move*, H-11-1, 2, and 3, which use the seminar-workshop technique to enlist support of community organizations and include information on *Adjusting to Living in the Nuclear Age*, *Preparedness and Natural Disasters*, *Fallout Shelter in Schools*, *Why Civil Defense?*, *Fallout Shelters in New Buildings*, *The Warning Story*, *Emergency Communications*, and *Emergency Operating Centers*. A total of 679,761 updated and revised copies of publications in this series were distributed by request during the fiscal year, making a cumulative total of more than 2 million.

During the year, OCD developed a new publication, *Committees for Community Shelter Planning*, H-11-B, designed to help civil defense directors to plan, organize, and work with local policy councils and technical advisory committees. A total of 43,960 copies of this publication were distributed to CSP areas immediately after awarding of CSP contracts. A fourth volume of *Meetings That Move*, H-11-4, was completed by yearend. Its purpose is to help organization chairmen to plan and conduct community shelter planning seminar-workshops.

Mutual interest policy and planning discussions with the Department of Health, Education, and Welfare, the Department of Housing and Urban Development, and the Appalachian Commission were initiated by OCD. Other cooperative civil defense community development programs involving regional and field staffs were planned.

OCD delivered 259 CSP briefings to members of the Congress or their staffs prior to the awarding of CSP contracts in their States or districts.

Exhibits and posters.—During the fiscal year, exhibits were placed at various locations throughout the Nation with a total potential audience of 40 million persons. The exhibit *Adapting to Living in the Nuclear Age*, first shown at the New York World's Fair, was still on display at the Seattle Science Center, on the site of the Seattle World's Fair, at yearend. Other similar exhibits were on display at the San Diego Museum of Natural History; Riverside Museum, Riverside, Calif.; Smithsonian Institution, Washington, D.C.; Museum of Science and Industry, Columbus, Ohio; and the St. Petersburg Museum, St. Petersburg, Fla. The 20-foot trailer exhibit *You and Survival* and the 20-foot exhibit *Meeting the Needs of People in Emergencies* were on display at the Los Angeles Museum of Science and Industry. The exhibits will remain on display at the San Diego and Los Angeles museums. The Army Exhibit Unit arranged for the OCD 35-foot trailer exhibit *Adapting to Living in the Nuclear Age* to remain on its current nationwide tour.

Each OCD region and Alaska and Hawaii were allotted two island exhibits of *Adapting to Living in the Nuclear Age* for display in air-

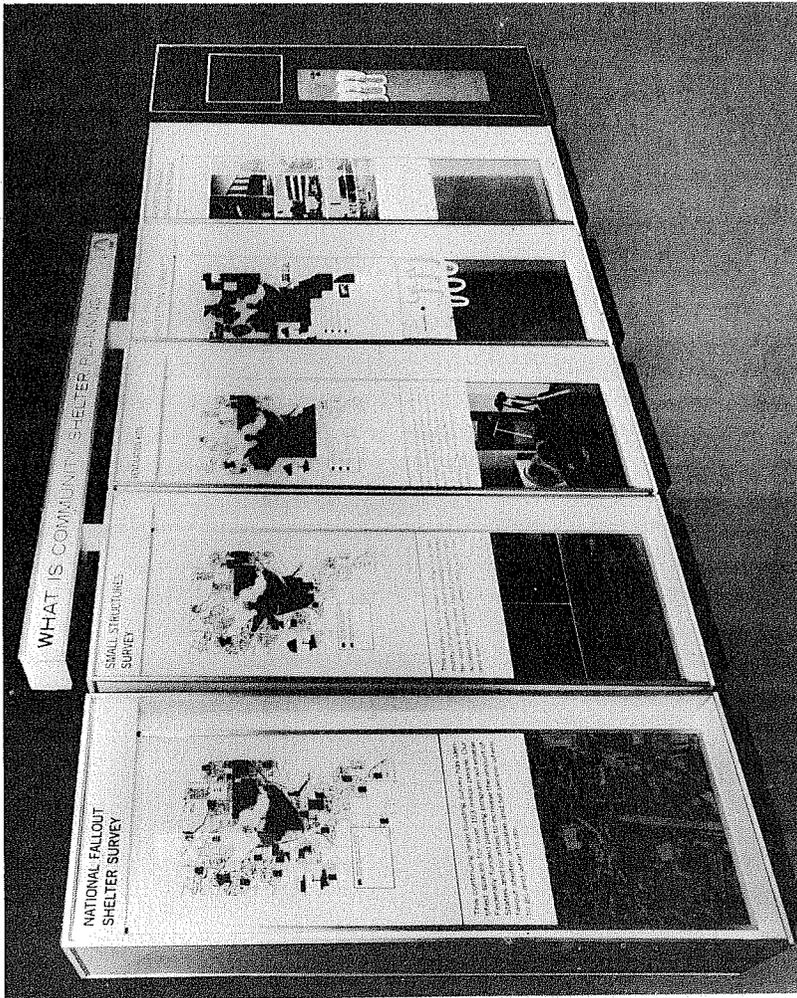


Figure 20.—OCD exhibit.—*What is Community Shelter Planning?*

ports. Four 20-foot major displays *Meeting the Needs of People in Emergencies*, *What is Community Shelter Planning?* (see fig. 20), *Adapting to Living in the Nuclear Age*, and *Shelter Essential to School Design* were produced for use at national organization conferences and conventions, and at State and county fairs.

One thousand 4- by 6-foot portable displays explaining various aspects of CSP were sent to OCD regions and States; two 5- by 6-foot portable displays *So You Want to Build a School* and *Dual Use Fallout Shelter in Industrial Construction* were sent to each OCD region and to Alaska and Hawaii; seven 8- by 10-foot exhibits titled *Nuclear Defense*, developed by OCD Region 7, were sent to all other OCD regions. A table top display *What is Community Shelter Planning?* was produced, and another *Meeting the Needs of People in Emergencies* was reprinted and distributed to local civil defense directors.

A filmstrip kit titled *Community Shelter Planning, K-39*, was completed and distributed to all OCD regions and to Corps of Engineers district officers and State and local civil defense directors.

Distinguished Service citations.—The Distinguished Service citation for cities or counties which have provided stocked fallout shelter space for all their resident population was awarded to Edina, Duluth, and Wayzata, Minn., and to Lyon and Marshall counties, Kans. A total of 211,936 stocked shelter spaces were provided by the five areas. By yearend, 35 areas had earned this citation with a cumulative total of 1,727,743 stocked shelter spaces.

TECHNICAL LIAISON

OCD policies, plans, programs, and executive actions continued to be reviewed during fiscal year 1967 to insure their agreement with sound technical and scientific concepts. Several ad hoc committees were constituted to review and analyze current and potential problems. These committees were staffed by personnel from the organizational components having a major interest in and responsibility for resolving the problems.

Guidance and monitoring of the civil defense activities of the National Academy of Sciences—National Research Council were continued. Major areas of attention by the committees, reorganized in fiscal year 1966, were radiological protection, fallout phenomena, protective construction, blast and thermal effects, and organization and operation of civil defense systems.

Activities also included the correlation of operational requirements and research proposals and the relation of research findings to the operational programs.

INDUSTRIAL PARTICIPATION

Industrial participation activities deal with all aspects of civil defense at industrial facilities. These activities are designed to encourage and help management to make definite plans and preparations for the protection of life and property in a civil defense emergency.

Throughout fiscal year 1967, the OCD continued to help business and industry make necessary provisions for (1) protecting industrial personnel and facilities, (2) preserving production of service capabilities, and (3) cooperating with and assisting the local government or community in its civil defense efforts.

Major accomplishments during the year were achieved through the cooperation of the OCD with industry and Federal agencies in (1) developing and disseminating industrial civil defense information, (2) bringing civil defense guidance to industry by means of conferences, seminars and training activities, and (3) expanding the nationwide fallout shelter system in commercial and industrial facilities.

Information and guidance materials.—Through OCD encouragement and assistance, Federal agencies developed and issued civil defense information and guidance materials adapted to the needs of industries with which they regularly conduct business. OCD provided leadership and guidance to 21 Federal departments and agencies that have facility preparedness responsibilities assigned them by Executive orders, so that publications and guidance materials could be developed in accordance with OCD plans. Industrial civil defense guidance materials were distributed to Department of Defense components that work with industrial firms in the DoD industrial defense program.

Many business and industrial firms continued to publish civil defense information in their magazines and newspapers and to distribute guidance material on personal and family survival to their employees. For example, the Connecticut Manufacturers Association mailed 2,500 copies of an OCD publication to its members, and the International Harvester Company distributed an OCD publication kit to each of its more than 100,000 employees located throughout the country, along with a letter from the company president urging employees to make preparations for family and home survival in accordance with civil defense plans.

One of the principal new civil defense publications distributed during fiscal year 1967 *Protection of Vital Records* was prepared by the Association of Records Executives and Administrators, Inc., in cooperation with the OCD. This 24-page publication assists company management in the development of a vital records protection program. It contains specific information for the selection and protection of vital records as well as a method for testing an emergency records program. Distribution of a total of 97,000 copies provided detailed guidance to

key management officials in commerce and industry throughout the United States.

Another publication *Civil Defense Aspects of Waterworks Operations* was prepared with the help of the American Water Works Association for guidance of waterworks personnel during emergency situations. More than 90,000 copies were distributed by Federal, State, and local civil defense offices to staff members of public, industrial, and private water plant facilities and to other interested persons.

Approximately 1,430,000 copies of civil defense publications applicable to business and industry were distributed through Federal agencies, State and local civil defense offices, business and industrial firms, and national professional and trade associations. This included about 40 publications that were made available for nationwide distribution.

Preparations for protection against disasters in American seaports are presented in a 23-minute motion picture titled *Port Preparedness* produced by the U.S. Maritime Administration, U.S. Department of Commerce, in cooperation with the OCD for use by local civil defense directors and port authorities.

An industrial exhibit titled *When You Build . . .* was displayed at major industrial civil defense meetings and other national organization meetings during fiscal year 1967. Its five large stand-up panels show how to include fallout protection in the design of industrial structures. The display features photographs of industrial buildings in which fallout shelter has been included in the original design. An automatic slide projector shows slides illustrating techniques for creating fallout shelter in new construction at little or no cost.

Approximately 13,000 business, professional, and civic leaders obtained civil defense guidance and information through seminars, conferences, and training sessions conducted primarily for civil defense purposes during fiscal year 1967. These included four classes in industrial civil defense management, offered at OCD Staff College, and conferences and seminars conducted by 45 State and local governments throughout the United States. Ninety-six industrial civil defense seminars were held by colleges and universities under the *Civil Defense University Extension Program* during the fiscal year.

Sponsors of the conferences and seminars included State industrial commissions and associations, universities, chambers of commerce, professional organizations, civil defense officials, and various Federal, State, and local government offices. The OCD provided civil defense information and guidance materials and, by request, participated directly in the conferences as keynote speakers or panel moderators.

The OCD continued to work with major national organizations in furnishing civil defense information and guidance materials to industry. Among them were the U.S. Civil Defense Council, the Chamber of

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Commerce of the United States, the National Association of Manufacturers, the American Society of Association Executives, the Millers National Federation, the American Iron and Steel Institute, the Association of Land-Grant Colleges and Universities, the American Society for Industrial Security, and the American Water Works Association.
 The *National Security Seminars* conducted by the Industrial College of the Armed Forces had more than 4,000 senior military officers and key industrial and civic leaders in attendance during the year. Appropriate civil defense reference materials were distributed in the seminars which were conducted in seven major metropolitan areas. In addition, guidance and reference material on industrial civil defense was provided for distribution to 129 industrial and government officials who attended training courses and seminars on industrial defense and emergency planning at the U.S. Army Military Police School, Fort Gordon, Ga.

Shelter development.—The OCD, through direct liaison with multi-plant industrial and business concerns, continued to encourage them to promote (1) the adoption of company policies supporting the National Fallout Shelter Program, (2) promulgation of the policy to operating divisions and subsidiaries, (3) licensing of facilities, (4) inclusion of dual-use shelters in new or modified construction, and (5) development of new concepts, new products, and high standards of advertising and marketing for products related to the shelter program.

At conferences, seminars, and meetings, as well as in publications and exhibits, the National Fallout Shelter Program has been presented as the core of a balanced civil defense program for industry and business. The automotive, tire and rubber, agricultural machinery, container, electrical equipment, machine tool, food product, nonferrous metal, steel, oil, paper, pharmaceutical, building material, communications, and transportation industries cooperated in the National Fallout Shelter Program during fiscal year 1967, as did also aircraft and missile manufacturers, banks and other financial institutions, grocery chains, mail order houses, and public utilities.

LABOR SUPPORT

Organized labor within the American Trade Union Movement accelerated its support of civil defense during fiscal year 1967. Some outstanding examples of this support were:

1. Passage of new civil defense policy resolutions in the States of Arizona and New York, in addition to a joint State policy resolution from Arkansas and Texas.
2. The American Labor Press, with a circulation of 20,000,000, devoted space to civil defense in over 600 local and State labor publications, including the *AFL-CIO News* and the *Building Trades Bulletin*.

3. A 1¼-hour training course *Labor's Supporting Role in State, County, and Local Civil Defense* resulted in training 3,901 labor leaders throughout the United States. As a result of this labor leadership training, 321,618 union members received a leadership briefing guide issued to participants of labor civil defense courses, seminars, or educational programs. In addition, the 1¼-hour course was offered this year to 300 members of the skilled trades and to apprentices of the Greater Boston Trades School of the AFL-CIO.

4. A radio program *Is Civil Defense Still Necessary?* was sponsored on February 26, 1967, by the AFL-CIO Public Relations Department and was broadcast over the 700-station radio network of the American Broadcasting Company.

5. The AFL-CIO Union Industries Show, Phoenix, Ariz., showed OCD exhibits to over 204,500 persons. Over 50,000 copies of civil defense educational material were distributed.

6. International unions programed their discussions on the subject of National Labor Civil Defense. Some of the unions that showed this civil defense interest were the Industrial Union of Marine and Shipbuilding Workers of America, AFL-CIO; the United Federation of Postal Clerks; the Building Service International Union; the Industrial Workers International Union; the International Association of Bridge and Structural Iron Workers; the Lathers International Union; and the Painters, Decorators, and Paperhangers of America.

7. The Labor Civil Defense Training Program was improved by the use of new training materials in training courses and seminars. These new materials included *Labor Leaders' Briefing Kit*, K-38, a 10-point teaching manual titled *How Does This Affect You?*, MP-42; a 1¼-hour labor civil defense briefing, also available in Spanish; an *Instructors Manual*, MP-43; and a revised brochure, *Labor Participation in Civil Defense*, MP-40.

8. In many cities, the International Brotherhood of Teamsters and other labor transportation resources transported shelter supplies from local warehouses to shelter sites without cost to the Government. Many employers donated trucks and other equipment for this purpose.

9. The first National Labor Training conference on civil defense was held September 28, 1966, at the Pentagon. Twenty-six national and regional leaders representing 400,000 members of the Building Service International Union attended the 3-hour session. As a result, 5,000 labor officials of that union were briefed on the 10-point self-teaching program *How Does This Affect You?*

INTERNATIONAL ACTIVITIES

The OCD, in coordination with the Department of State, continued its cooperation with friendly nations. Principal activities included mutual civil defense planning and exchange of visits and information

with the North Atlantic Treaty Organization (NATO) and the United States/Canada Joint Civil Emergency Planning Committee (JCEPC).

The OCD represented the United States at meetings of the NATO Civil Defense Committee in Paris in November 1966 and May 1967. Following the NATO meeting, committee members toured civil defense emergency operating centers and facilities located in Denton, Tex.; Denver, Colo.; and Battle Creek, Mich.; in addition to the NORAD headquarters in Colorado Springs, Colo.; and civil defense installations of the Canada Emergency Measures Organization.

An OCD technical representative who attended the NATO Working Party on Shelter meetings, held in January 1967 in Paris, also conferred with officials in Rotterdam, Netherlands, and London, England; and another representative from OCD attended the third International Conference on Water Pollution Research in Munich, Germany, and also met with scientists of the World Health Organization in Geneva and officials of the International Atomic Agency in Vienna. A technical committee of the International Electrotechnical Commission concerned with nuclear instrumentation standardization met in Tel Aviv, Israel, and the United States delegation included an OCD representative. In addition, OCD prepared United States position papers, for use in the December 1966 meeting of the NATO Working Group on Detection and Warnings, and gave assistance to the Department of State in the preparation of United States position papers for meetings of the NATO Senior Civil Emergency Planning Committee in session in November 1966 and June 1967.

The United States/Canada Regional Civil Emergency Advisory Committee established by the JCEPC met at Montebello, Quebec, Canada, in May 1967. Directors of border regions conducted a series of three cross-border conferences at Everett, Washington; Shilo, Manitoba; and Base Borden, Ontario. State and Province officials in attendance discussed joint emergency planning activities, cross-border emergency assistance requirements, and related problems.

The United States/Canada Joint Emergency Resources Planning Committee (JERPC) was established by the JCEPC in May 1966 to deal with United States/Canadian, Federal/national cooperation and area emergency planning. The JERPC consists of a committee and three subresource working groups in the resource areas of food, fuel and energy, and industrial production and materials. There is OCD representation on the JERPC and on each of the subresource working groups. During the year, several planning meetings were held, and by June 1967 each resource group was fully organized to begin the planning work.

The Civil Defense Directors of Belgium, Canada, Denmark, France, Italy, Netherlands, Norway, and West Germany, as well as the Inspec-

tor General of Civil Defence for Great Britain, were among the 92 foreign officials who visited the OCD during fiscal year 1967. Other visiting civil defense officials were from Austria, Belgium, Canada, France, Italy, Netherlands, Sweden, Switzerland, Thailand, the United Kingdom, and West Germany. Additional visitors were: six army officers from Brazil, 10 from Japan, six parliamentary and military delegates from Venezuela, and six members of the Committee for Protective Construction of the West German Building Industry Association. Attending courses at the OCD Staff College were 12 civil defense officials from Canada, Great Britain, Thailand, the United Arab Republic, and Venezuela.

NATO and the Central Treaty Organization (CENTO) member countries were supplied with OCD Information Bulletins and technical publications, as well as the OCD annual report for fiscal year 1966. In response to a total of 331 requests, certain OCD publications were sent to 45 countries. Three new OCD motion picture films were furnished to NATO and CENTO civil defense libraries for loan to member nations. These and other films were either loaned to or purchased by the Governments of Austria, Canada, England, Malta, Netherlands, Scotland, and Switzerland.

THE AMERICAN NATIONAL RED CROSS

The services of the American National Red Cross (ANRC) were available to the OCD in both advisory and operational capacities. The ANRC continued to assist the OCD in providing fallout shelter space in its buildings in accordance with the memorandum of understanding dated August 15, 1962. In addition, the ANRC continued to encourage local chapters to assist in the program.

The ANRC assisted Federal, State, and local governments in developing civil defense readiness. For this purpose, the OCD arranged for an ANRC representative to carry on civil defense liaison work at the national level and for an ANRC consultant to serve at each OCD regional office.

More than 3,600 local ANRC chapters, widely dispersed nationally, continued to train millions of persons in skills essential to civil defense preparedness; e.g., first aid, home nursing, emergency mass feeding, and management of community fallout shelters. In addition, the local ANRC chapters assisted materially in the Medical Self-Help Program and in operational planning and training.

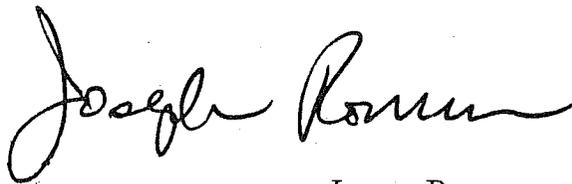
ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF PUBLIC FALLOUT SHELTERS

This section of the report and appendix 2 contain the information on advisory committees required by section 10(a) of Executive Order 11007, February 17, 1962.

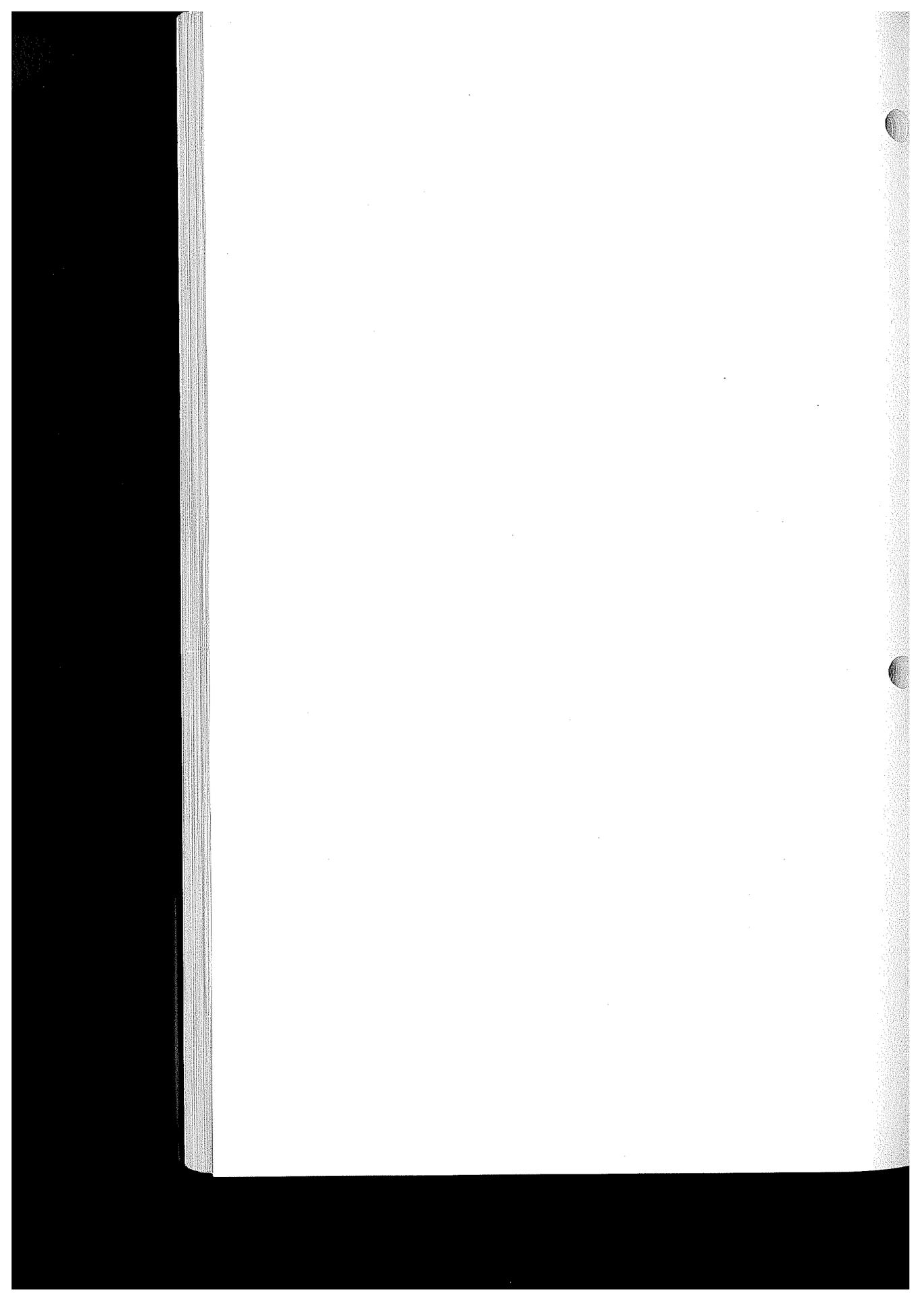
The sole purpose of advisory committees is to advise the Director of Civil Defense. The Advisory Committee on the Design and Construction of Public Fallout Shelters is the only advisory committee that served the Office of Civil Defense during fiscal year 1967.

The chairman is a full-time, salaried OCD official, and the committee membership comprises, in addition to the chairman, 13 outstanding representatives of the American Institute of Architects, the American Institute of Planners, the Consulting Engineers Council, the American Society of Professional Engineers, the Engineers Joint Council, the American Society of Civil Engineers, and the Associated General Contractors of America, Inc. Each member is a person whose experience and talents enable him to make a major contribution to the achievement of OCD objectives.

The committee reviewed OCD programs and activities of interest to architects, engineers, urban designers, and contractors and suggested improvements. Among the programs reviewed and discussed were the Direct Mail Shelter Development System, the Home Fallout Protection Survey Program, and the Professional Development Program. In June the co-chairman sent letters to architects of proposed new buildings in the seven States of the DMSDS program, urging them to incorporate shelter in their designs and to take advantage of the OCD advisory service.



JOSEPH ROMM,
Acting Director of Civil Defense.



Appendix I

DESCRIPTION OF PUBLIC FALLOUT SHELTER SUPPLIES

General Shelter Supplies, Radiation Kits, and Packaged Ventilation Kits (PVK's)

Food rations.—Food rations, providing 10,000 calories and amounting to 5 pounds in weight per shelter occupant, are austere but adequate for sedentary conditions and estimated duration of shelter occupancy. The food is packaged in hermetically sealed cans having a capacity of 2½ or 5 gallons. These containers and special formulation of the food products are expected to assure that the food will remain usable for as long as 15 years after storage.

The Armed Forces Food and Container Institute, now the Army Natick Laboratories, developed specifications for the food items. There are: (1) A survival biscuit—a baked wheat flour biscuit containing small amounts of corn and soy flour—developed by the National Biscuit Co. for the New York State Civil Defense Commission; (2) a survival cracker—a baked wheat-corn cracker containing more corn flour than the survival biscuit, but no soy flour—developed by the Midwest Research Institute for the State of Nebraska; (3) a bulgur wafer—containing parboiled bulgur wheat that has been dried, puffed, and blended with several ingredients—developed by the U.S. Department of Agriculture; and (4) a carbohydrate supplement containing sucrose, glucose, and flavorings—adapted from a standard product in accordance with a military specification.

The physiological fuel value of each of the four dry food items is approximately 2,000 calories per pound. The basic ration of 10,000 calories per shelter occupant contains proper components of protein, carbohydrate, and fat. The protein content is low, since consumption of high-protein foods increases renal activity and would require consumption of water in excess of limited amounts expected to be available in shelters. In accordance with established nutritional requirements, the carbohydrate supplement is limited to one-third the weight of the total food ration. The ration contains sufficient salt to preserve body fluids, but vitamin fortification is not necessary, and deficiencies in calcium, phosphorous, or potassium would not be of serious consequence during the limited period of shelter occupancy.

Food rations do not provide for special nutritional requirements of

infants, young children, pregnant women, or those who are aged or ill. Special foods required by them must be brought into the shelter by the individuals or families concerned.

Sanitation kits.—Sanitation kits, designed for waste disposal during shelter occupancy, are provided. Two kits are available: one with supplies to serve 25, and the other with supplies to serve 50 persons.

Each kit includes a 17½-gallon fiber drum packaged with toilet seat, toilet tissue, commode chemical, sanitary napkins, drinking cups for individual use, and other items. Packaged with each kit are instructions for its use. The toilet seat is designed to be used with the fiber drum as a chemical toilet, and as water containers are emptied, they can be used in the same manner. This method of waste disposal has been used satisfactorily in shelter occupancy tests conducted as part of OCD research projects.

Assembly of the kits is on the schedule of *Blind Made Products* under terms of the Wagner-O'Day Act of June 1938 (52 Stat. 1196; 41 U.S.C. 46-48). Workshops for the blind throughout the country therefore assemble the individual kit items. The National Industries for the Blind selects these workshops and competitively procures the kit components through centralized procedures that assure the advantage of volume purchasing. Eleven workshops have performed the task of assembling sanitation kits.

Medical kits.—Medical kits are provided in two sizes: one to serve 50 to 65 persons, the other to serve 300 to 325. These kits contain different quantities of identical items that provide an austere capability to save lives and alleviate suffering by (1) preventing disease and checking its transmission, (2) controlling emotional stress, and (3) controlling disease symptoms to alleviate pain and prevent complications. Medication and devices are not provided for chronic diseases, childbirth, or for purposes that require a high degree of professional proficiency.

Since health status, skills proficiency, and professional ability of shelter occupants can be estimated only generally, the kits are designed for nonprofessional use and contain nontechnical instruction booklets. The National Academy of Science-National Research Council; U.S. Public Health Service, Division of Health Mobilization; and DoD medical authorities have approved the items in the kit. Contents are adequate to serve emergency needs generally of normal, healthy persons.

Water containers.—The containers are 17½-gallon, lightweight steel drums supplied with a double polyethylene liner. The drums are filled at the shelter site with water from sources meeting Public Health Service standards. One container is intended to serve five shelter occupants, and tests have shown that this method is suitable for long-range storage of potable water. During shelter occupancy, the empty

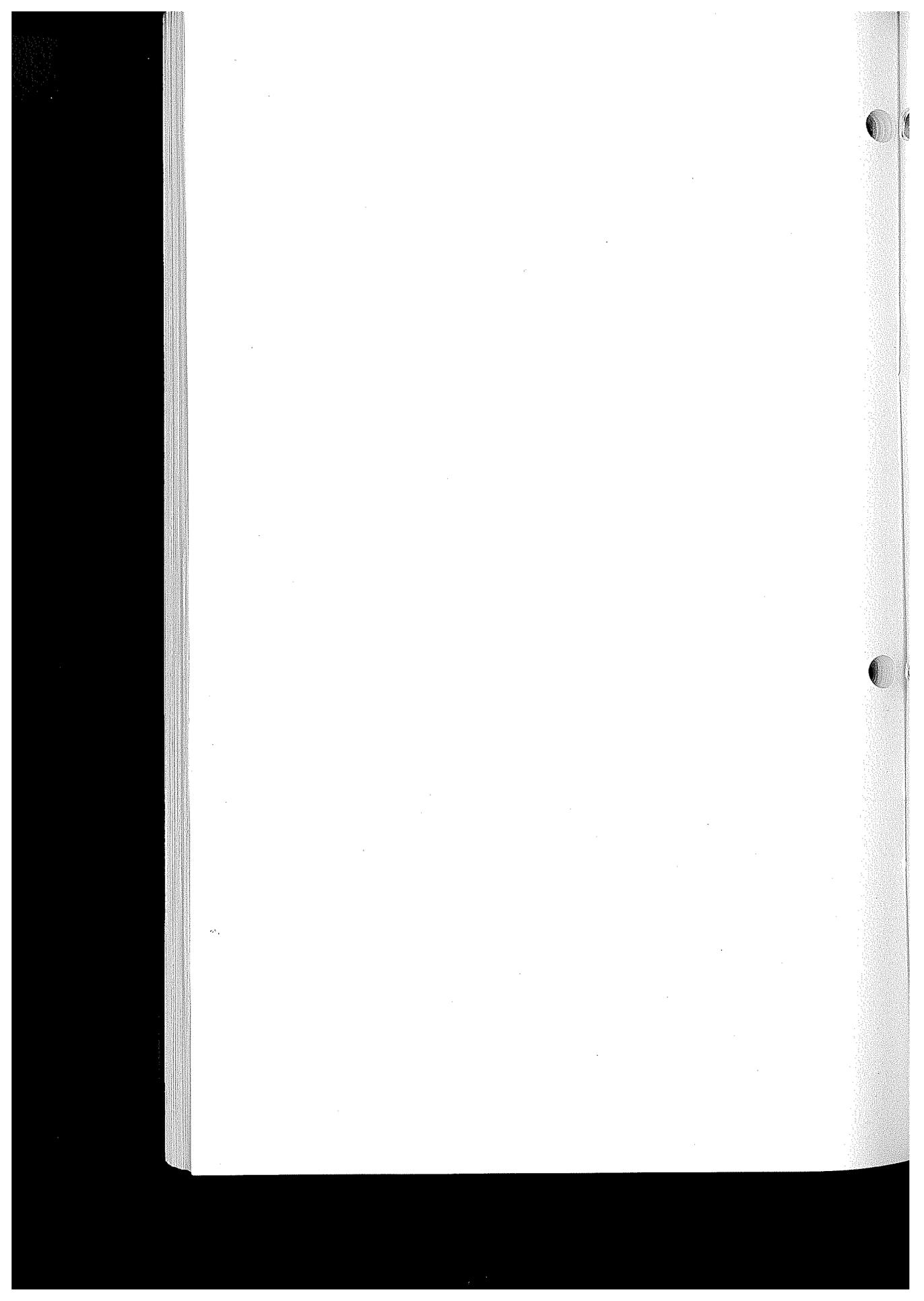
water containers may be converted to chemical toilets by using appropriate items contained in the sanitation kits.

Radiation kit.—At least one radiation kit, to be used by trained radiological monitors, is supplied each public fallout shelter. The kit contains: (1) A low range beta-gamma discriminating survey meter (CD V-700), known as a Geiger counter, for monitoring personnel, food, and water; (2) a high range survey meter (CD V-715) or ion chamber for monitoring inside and outside the shelter; (3) two dosimeters (CD V-742) for measuring personnel exposure; and (4) a dosimeter charger (CD V-750) to reset and recharge the dosimeters.

Use of this equipment during shelter occupancy will enable the radiological monitor to (1) locate the shelter area offering greatest protection, (2) evaluate contamination of personnel and material brought into the shelter, (3) determine when adjoining areas are sufficiently free of radiation to be used for relieving overcrowding, (4) control radiation exposure of persons performing emergency functions, and (5) provide radiological data on the surrounding area to the shelter manager and the local emergency operations center.

PACKAGED VENTILATION KIT (PVK)

The PVK is packaged in two units. Unit A, weighing 103 pounds and having a volume of 8.6 cubic feet, contains a fan assembly with a stand, duct adapter, and accessories. Unit B, weighing 38.5 pounds and having a volume of 5 cubic feet, contains a drive module with saddle, pedals, chain, and handlebar. This is known as a type I PVK. The kit may also be issued as a type II PVK which includes two B-units and permits two persons to operate the fan. The fan may be operated electrically as well as manually. The shelter occupancy can be increased considerably by use of the PVK.





Office of Civil Defense Instruction

OFFICE OF THE SECRETARY OF THE ARMY

DATE August 5, 1966

NUMBER 5120.2

MGT(MO)

ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF FALLOUT SHELTERS

- References: (a) Federal Civil Defense Act of 1950, as amended (50 U.S.C. App. 2251-2297)
- (b) Executive Order 10952 of July 20, 1961
 - (c) DoD Directive 5160.50 of March 31, 1964
 - (d) Secretary of the Army memorandum of April 1, 1964, Organization and Operation of the Office of Civil Defense and Delegation of Administrative Authorities for Civil Defense Functions

1. General

By virtue of the authority contained in reference (a), as redelegated to me by reference (b), (c) and (d), I hereby continue the Civil Defense Advisory Committee on the Design and Construction of Fallout Shelters. The purpose, membership, and operation of the committee are set forth below.

2. Purpose

The purpose of the Committee is to advise the Director of Civil Defense in the following matters:

- a. Review and make recommendations on the technical problems related to fallout shelter design and construction including Federal programs to overcome fallout shelter deficits.
- b. Provide means for effective communications relating to shelter design and construction between the Office of Civil Defense and the membership of the associations named below.
- c. Recommend methods of stimulating shelter construction through development of plans and designs, by reducing shelter construction costs, and by communicating technical information conducive to shelter construction to architects, engineers, contractors, and building owners.

3. Membership

This Committee shall be representative of the American Institute of Architects, the American Society of Civil Engineers, the Associated General Contractors of America, Incorporated, the National Society of Professional Engineers, the Engineers Joint Council, the American Institute of Planners and the Consulting Engineers Council. Total membership shall consist of fifteen members.

a. There shall be two members from each of the seven professional organizations named above. One of the two members shall be an officer, the other a staff member, of the organization represented.

b. One member, a full time, salaried Government official designated by the Director of Civil Defense, shall be Chairman of the Committee.

c. If a vacancy occurs on the Committee, it shall be filled in the same manner as the original appointment.

4. Operation

a. The Committee shall be organized and operated in accordance with the references and with applicable DOD and OCD directives and instructions.

b. The Chairman shall call each meeting of the Committee, and shall formulate the agenda of each meeting. He shall make provision for taking minutes of each meeting, and shall certify the accuracy of summary minutes thereof. He shall have the authority to adjourn any meeting whenever he feels that its continuation would not be in the public interest.

c. The functions of the Committee are solely advisory, and any determination of action to be taken, based in whole or in part on such advice, shall be made by the Director of Civil Defense.



WILLIAM P. DURKEE,
Director of Civil Defense.

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MEMBERSHIP LIST

ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF PUBLIC FALLOUT SHELTERS

Meeting Dates—July 15, 1966, and April 10, 1967

Office of Civil Defense:

<i>Designee</i>	<i>Name, Title, and Affiliation</i>	<i>Address</i>
1. Chairman----	Mr. James E. Roembke, deputy assistant director of Civil Defense, Technical Services, Office of Civil Defense.	The Pentagon, Washington, D.C. 20310.
2. Executive secretary.	Mr. Robert Berne, chief architect, Technical Services, Office of Civil Defense.	The Pentagon, Washington, D.C. 20310.

American Institute of Architects:

3. Co-chairman..	Mr. John W. McLeod, board member, Washington Metropolitan Chapter, American Institute of Architects.	1705 DeSales St. NW., Washington, D.C. 20006.
4. Staff member.	Mr. William H. Scheick, executive director, American Institute of Architects.	1735 New York Ave. NW., Washington, D.C. 20006.
5. Alternate staff	Mr. M. Elliott Carroll, administrator of Public Services, American Institute of Architects.	Do.

American Society of Civil Engineers:

6. Officer-----	Mr. Howard G. Dixon, Howard G. Dixon, Inc.	284 Putnam Ave., Freeport, N.Y. 11520.
7. Staff member.	Mr. William H. Wisely, executive secretary, American Society of Civil Engineers.	345 East 47th St., New York, N.Y. 10017.
8. Alternate staff member	Mr. D. P. Reynolds, assistant executive secretary, American Society of Civil Engineers.	345 East 47th St., New York, N.Y. 10017.

Associated General Contractors of America, Inc.:

9. Officer-----	Mr. John E. Healy II, John E. Healy & Sons, Inc.	707 Tatnall St., Wilmington, Del. 19801.
10. Staff member.	Mr. John K. Bowersox, director, Building Division Associated General Contractors of America, Inc.	20th and E Sts. NW., Washington, D.C. 20006.

National Society of Professional Engineers:

<i>Designee</i>	<i>Name, Title, and Affiliation</i>	<i>Address</i>
11. Officer-----	Mr. John H. Stufflebean, president, National Society of Professional Engineers.	211 West Pennington St., Tucson, Ariz. 85701.
12. Staff member--	Mr. Paul Robbins, executive director, National Society of Professional Engineers.	2029 K St. NW., Washington, D.C. 20006.
13. Alternate officer.	Mr. Leo Ruth, vice president, National Society of Professional Engineers.	919 The Alameda, San Jose, Calif. 95126.

Engineers Joint Council:

14. Officer-----	Mr. R. H. Tatlow III, president, Abbott, Markt & Co., Inc.	630 Third Ave., New York, N.Y. 10017.
15. Staff member--	Mr. Carl Frey, secretary, Engineers Joint Council.	345 East 47th St., New York, N.Y. 10017.

American Institute of Planners:

16. Officer-----	Vacancy.	
17. Staff member--	Mr. Robert L. Williams, executive director, American Institute of Planners.	917 15th St. NW., Room 800, Washington, D.C. 20005.

Consulting Engineers Council:

18. Officer-----	Mr. J. Gibson Wilson, Jr., J. Gibson Wilson and Associates.	1469 Church St. NW., Washington, D.C. 20005.
19. Staff member--	Mr. Donald A. Buzzell, executive director, Consulting Engineers Council.	1155 15th St. NW., Washington, D.C. 20005.

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Washington, D.C.
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Appendix 3



Office of Civil Defense Instruction

OFFICE OF THE SECRETARY OF THE ARMY

DATE July 20, 1967

NUMBER 5120.1

MGT (MO)

INTERAGENCY CIVIL DEFENSE COMMITTEE

- References: (a) Section 401 of the Federal Civil Defense Act of 1950, as amended, as affected by Reorganization Plan No. 1 of 1958, as amended
- (b) Executive Order 10952, "Assigning Civil Defense Responsibilities to the Secretary of Defense and Others," as amended
- (c) Executive Order 10346, "Preparation by Federal Agencies of Civil Defense Emergency Plans," as amended
- (d) Executive Order 10958, "Delegating Functions Respecting Civil Defense Stockpiles of Medical Supplies and Equipment and Food"
- (e) Executive Orders 10997-11005, 11088-11095, and 11310, Assigning Emergency Preparedness Functions to Various Federal Agencies
- (f) BoB Circular A-63, "Management of Interagency Committees"

1. Purpose

a. This instruction establishes, pursuant to references (a) and (b), the Interagency Civil Defense Committee (hereinafter referred to as the Committee) to aid in assuring that civil defense planning and operations, pursuant to references (c), (d), and (e), within the executive branch will be in consonance with the civil defense plans, programs, and operations of the Secretary of Defense.

b. The instruction also sets out the composition, responsibilities, and functions of the Committee and the authority of the Chairman.

2. Applicability

The provisions of this instruction apply to all OCD elements whose functional responsibilities involve civil defense planning for operational readiness as stated in paragraph 4 hereof.

Appendix 3



Office of Civil Defense Instruction

OFFICE OF THE SECRETARY OF THE ARMY

DATE July 20, 1967

NUMBER 5120.1

MGT(MO)

INTERAGENCY CIVIL DEFENSE COMMITTEE

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2. Applicability

The provisions of this instruction apply to all OCD elements whose functional responsibilities involve civil defense planning for operational readiness as stated in paragraph 4 hereof.

3. Composition of the Committee

a. The Chairman of the Committee shall be the Director of Civil Defense or his named representative.

b. All departments and independent agencies of the Federal Government having civil defense responsibilities under references (c), (d), and (e) are invited to be represented on the Committee.

c. The Office of Emergency Planning is being invited to participate by designating observers.

4. Responsibilities and Functions

a. *Responsibilities*

(1) The Committee shall advise the Director of Civil Defense in carrying out his responsibilities (reference (b)) in the field of civil defense and in planning.

(2) The Chairman shall be responsible for the conduct of Committee activities, shall provide secretariat services, and shall coordinate the work of the Committee with the activities of other Government agencies and interagency groups having responsibilities in the field of emergency preparedness.

b. *Functions.* Committee functions include, but are not limited to:

(1) Promoting cooperation among Federal agencies in the prosecution of civil defense objectives.

(2) Reporting on civil defense developments at national, State, and local levels.

(3) Coordinating and correlating civil defense planning and program implementation at the Federal level.

(4) Recommending measures to assure maximum utilization of the capabilities and technical competence of the Federal establishment to provide for a more effective civil defense system at Federal, State, and local levels.

(5) Advising on policy guidance governing implementation of civil defense plans and operational procedures and on such other matters as the Chairman may request.

5. Committee Management and Reports

a. *Management*

(1) The Chairman, or his named representative, shall administer activities of the Committee in accordance with BoB Circular A-63, "Management of interagency committees," and applicable DoD directives.

(2) The Management Office, under the Assistant Director of Civil Defense (Management), shall be responsible for maintaining committee management files as prescribed in attachment to BoB Circular A-63.

b. *Reports.* Information on the Committee shall be included in annual reports on interagency committees, as required by BoB Circular A-63 and applicable DoD directives.

6. Duration of Committee

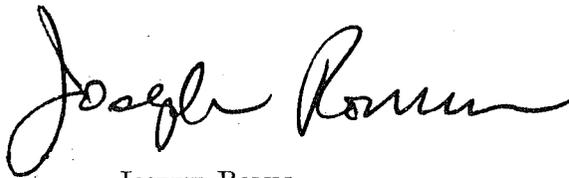
The Committee shall continue in existence until June 30, 1968, or whenever the mission is completed, whichever is earlier.

7. Rescission

OCD Instruction 5120.1 issued September 17, 1964, is hereby rescinded.

8. Effective Date

This instruction is effective the date of issuance.



JOSEPH ROMM
Acting Director of Civil Defense

DISTRIBUTION:

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Appendix 4



Office of Civil Defense Instruction

OFFICE OF THE SECRETARY OF THE ARMY

DATE June 22, 1967

NUMBER 4300.4

PO(EO)

MEMORANDUM OF UNDERSTANDING WITH THE FEDERAL AVIATION ADMINISTRATION IN SUPPORT OF NAWAS

1. Purpose

This instruction transmits a copy of a memorandum of understanding between the Office of Civil Defense and the Federal Aviation Administration (FAA) on the dissemination of "attack warning" messages over the FAA Service B Data Interchange System (BDIS) network.

2. Background

a. The memorandum of understanding between OCD and FAA was developed to provide for further dissemination of an "attack warning" message over the FAA Service B teletypewriter system to approximately 375 FAA facilities in the 48 contiguous States. (Alaska and Hawaii are not on the system.) Some of these facilities are in locations where NAWAS has not been installed.

b. A NAWAS Warning Point is installed in the San Francisco FAA International Flight Service Station; this is designated as the primary FAA contact point. A secondary FAA contact point has been installed at the Longmont (Colorado) Air Route Traffic Control Center. Messages received over NAWAS will be transmittable from either of these locations over the entire Service B system.

3. Responsibilities

a. *OCD Headquarters.* The Staff Director, Emergency Operations Division, under the general supervision of the Deputy Assistant Director for Operations, Plans and Operations, will be responsible for coordinating OCD functions under the terms of the attached memorandum of understanding.

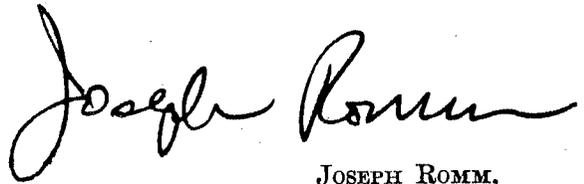
b. *OCD Regional Directors.* The OCD regional directors will be responsible for providing to the State civil defense directors information on the FAA Service B locations, so that the State directors may inform local civil defense directors of the availability of FAA facilities and when their use would be beneficial.

4. FAA Action and Procedures

The Federal Aviation Administration has prepared an order for its field facilities which details the dissemination procedures under the terms of the OCD-FAA memorandum of understanding.

5. Effective Date

This instruction is effective the date of issuance.



JOSEPH ROMM,
Acting Director of Civil Defense.

Attachment

OCD-FAA agreement

DISTRIBUTION:

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MEMORANDUM OF UNDERSTANDING BETWEEN

FEDERAL AVIATION ADMINISTRATION AND OFFICE OF CIVIL DEFENSE

I. Purpose

The purpose of this memorandum is to identify and fix by agreement the responsibilities and working relationships of the Federal Aviation Administration (FAA) and the Office of Civil Defense (OCD) to provide extensive dissemination of the attack warning message.

II. Responsibilities

A. The Office of Civil Defense shall:

1. Provide the necessary telephone equipment on the National Warning System (NAWAS) in a minimum of two FAA facilities at no cost to FAA.

2. Arrange for dissemination of attack warning information over NAWAS to the FAA facilities at the appropriate time.

3. Advise State Civil Defense Directors of the locations of FAA stations having Service "B". Where plans indicate the desirability of receiving warning information from the FAA, the local Civil Defense Director may contact the local FAA Facility Chief and make the necessary arrangements.

B. The Federal Aviation Administration shall:

1. Monitor NAWAS 24 hours per day at the FAA facilities where the system is installed and acknowledge all tests of the system.

2. Acknowledge receipt of attack warning information received over NAWAS and further disseminate the attack warning information nationally over Service "B".

3. Arrange to pass the attack warning information to local Civil Defense Directors at locations where this service is negotiated. Such negotiations will be based on single point contact between a FAA facility and a local civil defense authority where no other NAWAS capability exists.

4. Provide OCD with a list of Service "B" terminal locations and any further changes in the list.

APPROVED:

OFFICE OF CIVIL DEFENSE

By

A handwritten signature in cursive script, appearing to read "Joseph Roman".

Date May 16, 1967

FEDERAL AVIATION
ADMINISTRATION

By

A handwritten signature in cursive script, appearing to read "Geraldine D. Baughman".

Date April 18, 1967

Appendix 5

EXAMPLES OF OPERATIONAL CAPABILITIES OF STATE AND LOCAL CIVIL DEFENSE OR- GANIZATIONS IN COMBATING THE EFFECTS OF NATURAL DISASTERS DURING FISCAL YEAR 1967

Tornadoes—Illinois, Michigan, and Indiana—April 21, 1967.—A series of tornadoes causing death and destruction in northeastern Illinois, northern Indiana, and western Michigan, left in their wake 55 fatalities in Boone and Cook Counties. In all of Illinois, 1,245 persons were injured, 561 homes, farm buildings, and apartment houses were destroyed, and more than 1,300 owners suffered loss as more than a million dollars worth of property was quickly turned into a jungle of debris. Civil Defense control points were quickly opened, and the planning that had been accomplished saved many lives and helped to prevent confusion and chaos. Generators provided by civil defense and lighting equipment owned by neighboring communities were sent to the disaster area for use during the rescue work.

The State CD staff coordinated activities of State departments and local governments with good results. National Guard units searched the wreckage for possible victims, and water was used from shelter supplies because power was cut off at local water pumping stations. Pillows, blankets, litters, and generators were used from Packaged Disaster Hospitals. CD communications, rescue units, and ambulances from nearby communities were used. Portable lighting equipment was furnished by many local CD units. The State CD area coordinator stated: "That Civil Defense support from all over the area was tremendous."

Wisconsin floods—April 1967.—Spring floods along the Mississippi River and its tributaries overflowed many communities in Wisconsin, causing more than \$1 million damage to public property and more than \$839,000 to privately owned property. As heavy rain occurred, with above-normal temperatures triggering the final melt on the Mississippi River and its tributary drainage basins, the civil defense State director began a series of reports to all county and city CD directors. Joint reports were prepared from information received from mayors, local CD directors, the U.S. Weather Bureau, and the U.S. Corps of Engineers. The CD State director briefed the Governor who ordered his

Command Post at the State capitol activated. CD State directors, CD staff, and other State agencies concerned with the effects of floods were alerted. Liaison was established with the U.S. Weather Bureau and the U.S. Corps of Engineers at Minneapolis, and procedures were reviewed for gathering damage assessment dollar amounts for public and private property affected. As reports flowed in from all sources, the Governor proclaimed a state of emergency in the flooded counties, thereby permitting State and local CD resources to be utilized. Close liaison was maintained with the Red Cross and Office of Emergency Planning (OEP) representatives. CD staff members provided briefings for those elected officials desiring more information than that appearing on the status boards in the Governor's Command Post.

All possible assistance was given by local CD organizations as the flood threat became more apparent. The early warning, coupled with recent flood experiences, brought quick action on the part of county and local officials. Cooperation between local civil defense, the Red Cross and the National Guard was outstanding. CD engineering equipment was obtained for flooded areas, and the CD State Office located in the Command Post served as a clearing house for requests for assistance. Emergency communications systems were in use between flooded areas and the local control centers.

As the flood waters receded, local CD directors quickly began the recovery stage of their overall disaster plan. While this disaster did not reach the scope of that in 1965, the damages suffered were severe enough in some counties to be of major disaster scale.

Power failure—New Jersey, Pennsylvania, Delaware, and Maryland—June 5, 1967.—Beginning at 10:22 a.m., the power failure affected an estimated 13 million people in the four States for as long as 10 hours. Seven public utility companies were affected as the load loss was estimated to be at least several million kilowatts. Communications between New Jersey, Pennsylvania, Maryland, and Delaware were affected, including telephone and teletype services. Most of the facilities were quickly switched to emergency power, according to emergency plans. Factories and offices closed down, resulting in an approximate \$50 million business loss.

In Delaware, two counties were affected by the power failure. There were six Emergency Broadcasting Stations in the area affected, and of this number, three used emergency onsite power. The State Emergency Operating Center and the two county EOC's operated fully during the emergency. Emergency civil defense owned generators were used, including the mobile generator of one rescue truck unit. This unit was used to rescue two window cleaners on an electrically operated lift outside the 24th story of a building in Wilmington. The State RACES Officer used his equipment to check not only within the State, but with RACES operators in the other affected States to get any information he could for the State EOC.