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Part 6 — THE CIVIL DEFENSE PROGRAM
(Prepared by the Federal Civil Defense Administration)

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Civil Defense

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Part 6 - THE CIVIL DEFENSE PROGRAMI. OBJECTIVE

Civil defense comprises those non-military measures necessary to minimize the emergency effects of an attack upon the population and industry of the United States. These measures include educating the people in the need for civil defense and in the basic knowledge and skills required for their self-protection, and recruiting, training, equipping and organizing civil defense forces for effective operations in an emergency.

Under Public Law 920, 81st Congress, the FCDA prepares and directs national plans and programs for civil defense and gives leadership, coordination, guidance and financial assistance to the State and local civil defense agencies. The FCDA is responsible for coordinating nation-wide civil defense operations in a civil defense emergency and providing support to attacked States and their civil defense forces. In carrying out these responsibilities FCDA is charged with utilizing to the maximum extent the existing facilities and resources of the Federal Government.

The State and local governments have the primary responsibility for civil defense. Their civil defense organizations are built upon existing State and local agencies and services.

By Executive Order No. 10427 dated January 16, 1953, FCDA is charged with coordinating Federal relief activities in natural disasters. Actual operations in natural disasters are carried on by the local, State and Federal agencies assigned such responsibilities.

II. PLANNING ASSUMPTIONS

The planning assumptions set forth below were those used by FCDA throughout 1953 and for developing its FY 1954 budget. Developments in the Soviet nuclear energy program and improvements in our own military and non-military defense in late 1953 are not reflected here. (For a summary of FY 1955 Planning Assumptions, see Appendix 8).

- A. The U.S.S.R. has the ability to strike any part of the U. S.

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- B. Such an attack would be made principally with atomic weapons delivered by air during normal working hours, supplemented by biological, chemical or conventional weapons attacks, along with sabotage and psychological warfare.
- C. Concentrations of people and industry would be the major targets of attack. Therefore, FCDA has designated a total of 193 areas as likely targets, of which 70 have been designated as critical target areas.* (See Appendix 1)
- D. Most probable aiming points would be the 92 major cities of the critical target areas.
- E. Each critical target area would be struck by at least one bomb. About 100 bombs would be dropped, each 2½ times as powerful as the Hiroshima A-bomb.
- F. Although complete surprise is possible, it is assumed that approximately fifteen minutes warning can be given to the public.
- G. A daytime attack, even with adequate warning and preparation, would result in an average of 110,000 killed and wounded per 2½ (x) bomb.

III. SUMMARY OF OPERATIONAL READINESS ON DECEMBER 31, 1953

Had an attack occurred on December 31, 1953, the status of our civil defense readiness would have been about as follows:

- A. Despite the efforts which have been made to alert the American people to the dangers we face and to the necessity for their having knowledge of the basic measures for personal protection, most of the public would have been physically and emotionally unprepared to cope with the attack.

* Target areas are the Standard Metropolitan Areas of the U. S., and all capitals of States, Territories and Possessions whether or not such capitals are in Standard Metropolitan Areas. Target areas having 40,000 or more manufacturing employees, plus the District of Columbia area, are designated critical target areas.

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- B. Warning of the attack would probably have been received by civil defense officials in all target areas in the country in a matter of minutes. However, only about 45% of the warning devices required for alerting the people in the target areas would have been installed and in operating condition. This compares to about 35% six months ago. With possibly 15 minutes or less advance warning of the attack people would not have had time to move from areas most likely to be attacked.
- C. The vast majority of the people in the densely populated parts of critical target areas could not have found adequate shelter even if they heard the warning.
- D. The number of wardens available would have been about one-fifth of what the States estimate would be required, and most of these would have lacked basic equipment such as helmets, first-aid kits or even arm bands for identification.
- E. The CONELRAD Plan for emergency broadcasting would have been invoked and civil defense information and instructions would have been given over the 1,300 AM radio stations now participating in the plan.
- F. Approximately 40% of the communications facilities needed for effective operation of civil defense forces would have been in place. This compares to 25% as of June 30, 1953.
- G. Only about 17% of the emergency medical supplies and equipment required to meet the present planning goal of treating 5,000,000 surviving casualties for 3 weeks would have been available.
- H. While most of the equipment necessary for emergency welfare services would have been available from surviving local community outlets, there would have been desperate need for additional mass feeding facilities and for emergency lodging and other welfare services; these needs could not have been met.

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- I. Our police forces generally would have been unable to cope with the tremendous problems which would have arisen in such areas as control and regulation of traffic and prevention of mass hysteria and mob action.
- J. Based on State estimates, only about 25% of rescue workers needed to save those entrapped in buildings and debris would have been available. Only a fraction of these would have had the requisite training, equipment and tools.
- K. Engineering services would have been relatively well-equipped to restore most vital services. However, there would have been a dangerously short supply of emergency equipment necessary to provide water for fire-fighting and medical and household purposes, and emergency light and power requirements for civil defense facilities. Only about 10% of the deficiencies in these items had been met on December 31, 1953. Less than one-third of the personnel which the States estimate would be needed for their civil defense engineering services would have been available on that date.
- L. Transportation services, while equipped to meet almost any emergency, would have been seriously handicapped by reason of disruption and damage, and by the lack of control centers and of completed plans for integrated transportation operations, both intrastate and interstate.

It is apparent, then, that on a national basis civil defense is still far below what could be considered even a minimum level of preparedness. However, a slow but steady build-up is in progress which, if continued, would insure a fairly adequate program within the next several years.

Two developments of the last six months should have a significant impact upon the civil defense program. A total of 175 mayors were given briefings on national security and civil defense problems by the President and top administrative officials in Washington during the last quarter of the year. This conference should produce very tangible results by making these officials more aware of the Nation's problems and by bringing about better coordination of local, State and Federal efforts in the civil defense field.

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The second important development in this period involved the completion of preliminary studies on a revision of FCDA policy on evacuation. Under the present policy of recommending against pre-attack evacuation, people are urged to remain in their homes or places of work if an enemy attack is determined probable or imminent, and to take available cover at the sound of warning. A change in this policy now seems advisable in view of the prospect of increased warning time being provided by the Department of Defense. Studies have shown that with an hour or more of advance warning of attack, millions of lives might be saved in many cities if people were moved outward from the congested urban areas. By the end of 1953 FCDA was prepared to recommend that each target city determine the applicability of this dispersal or thin-out plan to its own needs and, where appropriate, that State and local civil defense organizations initiate the pre-planning necessary for the new policy to be announced to the public at such time as adequate early warning can be anticipated.

IV. STATUS OF THE PROGRAM ON DECEMBER 31, 1953

A. Organization for Civil Defense

The basic structure of civil defense is made up of existing organizations and resources of Government at all levels, together with those private enterprises and organizations which furnish basic public services. Employees of these public and private organizations, augmented by volunteers, comprise the core of the Nation's civil defense forces. The development of plans for coordinating and making the most effective use of these resources is the responsibility of FCDA and the civil defense organizations which have been established by all States and Territories and by most cities and towns.

No community in the country would be self-sufficient in the event of attack, nor can any community rule out the possibility of its being subjected to some form of attack. It is essential, then, that all localities organize to support other areas, as well as for self-protection purposes.

As of December 31, 1953, a total of 32 States had put into effect interstate civil defense compacts. (See Appendix 2). Twenty-three of these States have adopted the Model Interstate Civil Defense and Disaster Compact recommended by FCDA and the Council of State Governments, of which sixteen have compacted with each other and offered to compact with all other States. Nine States which have authority to make compacts still have not implemented this authority, and three States and the District of Columbia do not have adequate statutory authority to enter into civil defense compacts.



In 33 States, legislative provision has been made for compensation for personal injury or death suffered by civil defense workers. In many of these States, however, the legislation provides for very limited coverage.

Since June 30, 1953, eight additional States have given authority to their civil defense agencies for directing operations to combat natural disasters. As of December 31, 1953, a total of 41 States and five Territories and Possessions had taken such action. Relief operations by six States in the seven major disasters which occurred during the year provided severe tests of civil defense organizations, techniques and capabilities.

As of June 30, 1953, the date of the latest report from the States, more than 4,500,000 persons (3% of the total population) were enrolled in civil defense. This number includes those persons who volunteered as individuals, as well as group assignments of employees of many public and private agencies and organizations providing basic public services. The current figure represents an increase of about 7% over December 31, 1952, and 48% over February 29, 1952, the date of the initial report on civil defense personnel. However, present enrollment is only about one-third of requirements as estimated by the States.

Cities and States are continuing to conduct tests designed to check their organizations and operational plans, as well as to educate the public. National readiness has now reached the stage where it is believed a countrywide civil defense test can be undertaken during 1954.

A civil defense operating organization is coming into being; however, from a nationwide standpoint, it is still not prepared to cope with the effects of a major attack directed against the country.

B. Public Understanding

The task of educating 160 million people in civil defense, the most extensive program of its kind ever undertaken by this Government in peacetime, entered a new phase in 1953.

The increasing recognition of civil defense as a permanent, integral part of the total defense of the Nation has changed the emphasis and to some extent the techniques of civil defense public education. The appeal has been strong and continuing, but deliberately less dramatic, in



keeping with the President's warning that we live in an "age of peril" and his admonition to avoid emotional peaks and valleys in our thinking on National defense.

The demonstrated usefulness of civil defense in natural disasters has helped convince many skeptics that trained, self-reliant citizens and communities organized for both self-help and mutual assistance, are good things to have -- just in case. So civil defense public education has been aimed more and more at family participation -- at not merely convincing the mind but stimulating constructive action.

There was a reason for this. For a crucial by-product of any enemy attack on the United States might be panic. Panic could be the decisive weapon and the surest antidote to panic is knowledge.

The attack on panic, therefore, was perhaps the most important single mission of FCDA's public education program in 1953. It embraced both individual and family pre-attack indoctrination and training, and blueprints for specific measures in the attack and post-attack phases designed to allay fear, combat rumor and restore confidence and the will to win.

Between June 30, 1953 and December 31, 1953, approximately 7,000,000 copies of FCDA publications were distributed by FCDA or sold by GPO, bringing the cumulative total to nearly 71,000,000. Many more million copies of these publications have been reprinted by State and local agencies, business firms, newspapers, and other private organizations.

The number of television stations in the country almost tripled during 1953. As each new station came on the air, FCDA supplied it with kits of civil defense television films. These films have been exhibited on all networks and have reached an audience of many millions of people. Transcribed radio programs prepared by FCDA have been distributed to the major radio networks and to 3,000 local stations. Between June 30, 1953 and December 31, 1953, eight official FCDA civil defense public education films were released, bringing the total to 24. These motion pictures, with a nation-wide audience of 15,000,000 yearly exclusive of TV, are being financed and produced by private film companies with FCDA technical assistance and policy guidance.



In 1953 FCDA public exhibits were shown to more than 8,500,000 people at 135 conventions, professional meetings, and State Fairs throughout the country. More than 100 national organizations had civil defense exhibits at their conventions. Many more contributed time and effort to achieve a wide-spread dissemination of civil defense educational material produced by the Agency.

A disaster news coverage plan at local, State, regional, and national levels was developed following visits by agency representatives to natural disaster areas. A cooperative understanding was reached by FCDA and the American Red Cross on the release of disaster information.

An important part of FCDA Emergency Information Operations is planning a defense against enemy psychological warfare techniques. Steps have been taken to alert State and local civil defense authorities to the need of being prepared to combat enemy psychological efforts.

The Department of Defense, American National Red Cross and FCDA, under the guidance of the ODM, have continued their joint campaign to educate the American people on the various uses for blood and blood derivatives and the continuing need for personal donations of blood.

Through these mass public education campaigns, the people are becoming more aware of the need for civil defense and acquainted with at least some of the measures necessary for self-protection. Although this is heartening, public understanding and participation in civil defense is still far below the level required.

C. Training

In addition to providing civil defense education and information to the general public, the national civil defense program must include special training for civil defense workers and officials. FCDA assists the States in their training programs by producing training materials, making available Federal funds to be matched by State and local funds for training programs, and by operating a National Civil Defense Training Center. It also stimulates civil defense participation by the Nation's schools, including the incorporation of civil defense instruction in the curricula of higher educational institutions, through professional channels and organizations.

The National Civil Defense Training Center now comprises a Staff College for training in civil defense administration and operations, and a Rescue School which teaches rescue operations and related skills, such as



emergency action to save lives and firefighting for householders. The primary purpose of the Center is to qualify persons as instructors so that they can give similar training to other groups. Between June 30, 1953 and December 31, 1953, 1,271 persons attended FCDA schools, bringing the cumulative total to 9,385. Of these, 2,106 attended the Staff College; 1,943 took training courses in rescue and related civil defense operations; 812, primarily from government facilities, took special light rescue training; and 4,524 attended miscellaneous special courses and conferences.

Encouraging progress is being made in the overall civil defense training program. However, as of December 31, 1953, only a fraction of the number of persons requiring even initial training had received such instruction.

D. Shelter

People in congested sections of our major cities are extremely vulnerable to enemy attack. As originally conceived, the shelter program did not contemplate complete protection for all of these people but was designed to reduce the number of casualties. FCDA's planning was directed toward the use of existing structures, with modifications wherever necessary, together with the construction of a minimum number of specially constructed shelters. Since Federal appropriations for shelter have not been made available, limited progress has been made in this program.

As indicated in Section III above, FCDA is now ready to recommend that, when there is reasonable assurance of sufficient advance warning, States and cities consider the adoption of a policy which would provide for the movement of people out of dangerous areas when attack appears probable. Under such a policy only those people who could not leave these areas would require heavy shelter. However, it has been recognized that shelter requirements cannot be based solely upon what is needed to protect people remaining in the most vulnerable areas. This is so, first, because we can never at any time afford to rule out the possibility of a surprise attack, and, second, even if there is sufficient time for movement, it may not be enough to permit all the people to get out of the range of blast and thermal effects.

In the course of studies of this proposed plan for dispersal or thin-out of concentrations of people upon receipt of warning, it has become clear that any policy recommended by FCDA would not be applicable to all cities.



Adaptations will be necessary to meet local needs. For this reason, FCDA is urging all cities to develop reasonably achievable shelter programs. They should continue with their shelter surveys and extend them to cover the fringe areas beyond the commercial and industrial centers. Private householders are being encouraged to provide home shelters, and industry is being urged to protect employees, vital equipment and facilities.

With FCDA assistance, 56 cities have been conducting shelter surveys in their most densely populated areas. (See Appendix 3). Many other cities have, as a minimum, posted available shelter areas. Manuals and pamphlets containing detailed instructions on how to build home shelters have been issued. Some householders have provided these shelters for the protection of their families and builders are beginning to incorporate shelters in some of the new residential developments.

E. Attack Warning

The Air Force is charged with providing warning of approaching enemy aircraft. The FCDA, under P. L. 920, is responsible for providing a means of disseminating these warnings to the civilian population. Attack warnings are disseminated from the Air Defense Control Centers (ADCC's) through a system known as the Civil Air Defense Warning System (CADW) to 11 keypoint Civil Air Defense Warning Centers located throughout the continental United States. The FCDA provides one attack warning controller at each of the ADCC's who is responsible for the dissemination of warnings to the key points. The objective is to provide sufficient key points to permit direct rapid dissemination of warnings to all critical target areas and target areas of the United States. In order to accomplish this objective, a total of 240 key points must be established. At present there are a total of 195, an increase of eight over June 30, 1953.

As of December 31, 1953, the CADW consisted of telephone networks from each ADCC to the key points within the respective Air Division (defense) areas. Ten ADCC's use private wires, with toll telephone back-up facilities for use in the event of failure of the private wire network. One ADCC is not yet equipped with a private wire network and uses only toll telephone facilities.

Since assuming responsibility for the supervision and operation of the CADW networks from the USAF, the FCDA has effected improvements based on time and efficiency studies. The key points within an Air Division can now receive and acknowledge test warnings from their ADCC in less than two minutes. Warnings can reach all key points in the country within 15 minutes.



Dissemination of warnings from key points is the responsibility of State and local civil defense officials. The warning program within the States consists of three major components: (1) the transmission of the alert from the key points to the cities and communities of the target areas; (2) the alerting of key civil defense personnel and other officials within a city; and (3) the operation of a system for warning the public.

During the past year, FCDA has been working with States in perfecting State warning plans. Studies have been made of available communications means that can be utilized to provide an integrated system for the dissemination of warnings from the key point centers to all local levels. Major cities are given priority so that they may receive speedy positive warnings of impending attack.

At the local level it is estimated that the state of readiness on December 31, 1953, as reflected by warning devices installed and in operation, was approximately 45% as compared to 35% on June 30, 1953. When additional warning devices purchased under the Federal-State matching funds program through FY 1953 are in operation, attack warning coverage will be provided for about 53% of the people in the target areas.

As part of an intensive program to determine adequacies of warning systems in target areas, 232 of the 253 principal cities of these areas have been analyzed and studied. The analyses made use of population density studies to insure that the systems will provide coverage where most needed. Recommendations to the cities for extension or improvement of their warning systems were developed by FCDA in close collaboration with research laboratories and industry.

The Ground Observer Corps, a civilian component of the Air Force, is designed to give depth to and fill gaps in the advance warning zone. FCDA is cooperating with the Air Force and State civil defense directors in an educational and recruitment program. It is estimated that 500,000 volunteers will be required for optimum results. As of December 31, 1953, approximately 324,000 persons were enrolled -- an increase of 19,000 over June 30, 1953.

F. Communications

To provide for rapid communications and bases of operations, civil defense control centers are required at all levels -- national, regional, State, city, and, in many cases, zones within a city. In order that there

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can be reasonable assurance of maintaining communications under attack conditions, such control centers utilize primary as well as secondary communications systems. These centers should be -- although many are not -- located outside areas of potential damage.

A major part of national operational planning is the establishment and operation of two emergency operations centers and seven regional emergency operations centers to give FCDA necessary operational capability in event of a civil defense emergency. Communications for this program include a national TWX system from FCDA headquarters locations to each of the seven FCDA regional offices and through these offices, to each State civil defense headquarters. This system, which is now in operation, can be augmented to some extent by the use of alternate telegraph facilities which are reserved for FCDA. Since June 30, 1953, arrangements have been made for the use of the facilities of the military affiliate radio systems (MARS). Additional planning contemplates use of the facilities of the radio amateurs participating in the Radio Amateurs' Civil Emergency Services (RACES), as well as leased telephone facilities. Also included as part of the national communications program is an inter-agency microwave system operating from three classified locations. As of December 31, 1953, this microwave system was 80% complete.

Progress has been made in establishing a target area communications program which is designed to assure the target areas, their support areas, and State coordination control headquarters, continuity of service and provide a means of two-way communications between control centers and civil defense teams. This program is financed in part by Federal-State matching funds and provides equipment necessary for effective use of certain existing radio facilities such as land transportation, public safety, industrial and amateur radio, and the wire and radio facilities of public communications companies.

When equipment purchased under the FY 1952-1953 contributions program is in operation, about 60% of the estimated requirements for State and local communications facilities will be met. However, until the equipment purchased under this program is installed, all existing facilities, enumerated above, cannot be utilized effectively during an emergency. As of December 31, 1953, 40% of the Nation's target area communications facilities had been installed, compared with 25% as of June 30, 1953.



Through the cooperation of the radio broadcasting industry, CONELRAD, which is designed to permit limited operation of AM radio stations during an attack, has been extended to approximately 1,300 broadcasting stations -- 100 more than when this plan became operative on May 15, 1953. On September 15, 1953, CONELRAD was tested for three hours on a nationwide scale utilizing simulated attack aircraft and thousands of Ground Observers. This and other tests have proved the system to be effective.

To establish coordinated use of the radio frequencies available for civil defense, a "Radio Frequency Allocation Plan for Disaster Communications Service and Radio Amateur Civil Emergency Service" was issued in October 1953. The plan provides for maximum use of radio communications with a minimum of interference between the State systems. This plan has been adopted by the majority of the State and local civil defense authorities. However, experience by the States in civil defense exercises involving radio communications has shown the need for more radio channels than are presently available to civil defense for intrastate and interstate operations. The FCDA has advised the appropriate Government agencies of these requirements and is continuing to work toward relief of the situation.

G. Health and Special Weapons Defense

According to FY 1954 planning assumptions, potential casualties from attack total 11 million, of which 7.3 million would survive the first 24 hours. However, because of the limited availability of personnel competent to furnish medical aid, present planning for the procurement and stockpiling of medical supplies is based on the minimum necessary medical care for an average of 5 million casualties over a 3-week period. Such supplies and equipment will come from State supplies, including those purchased under the matching funds program, and from Federal stockpiles.

With certain exceptions, particularly basic equipment for improvised hospitals, the medical supplies and equipment provided for by FY 1951-53 appropriations for the Federal stockpile program and the Federal-State matching funds program will in general be sufficient for the emergency medical care of approximately 2 million surviving casualties for the first post-attack week.



As of December 31, 1953, \$81.7 million of medical and special weapons defense supplies and equipment financed wholly from Federal funds or from Federal-State matching funds had been delivered to the Federal warehouses or to the States. This compares with \$55.6 million as of June 30, 1953.

Some examples of recent measurable progress in planning for health and special weapons defense services are:

1. Critical evaluation and stabilization of items for 200-bed improvised hospitals.
2. Assignment of responsibility for civil defense nursing to nursing organizations in 35 States.
3. Substitution of serum albumin for dried blood plasma as a blood derivative. (It has been established that it is not possible to sterilize blood plasma; serum albumin, one of the fractions which can be produced from plasma is satisfactory for the treatment of shock and also is sterile).
4. Greater reliance on the use of the less expensive and more easily obtainable plasma expanders (Dextran and PVP) in place of blood derivatives.
5. Participation by leading personnel groups in the field of mental health in the development of a better understanding of psychological problems in a civil defense emergency.
6. Evaluation of radiological defense instruments under actual field conditions.
7. Faster field methods for determining after attack whether food or water is sufficiently free from radioactivity to be acceptable for consumption.
8. Agreements with other Federal agencies for improving the reporting of unusual occurrences of diseases of man, animals and crops.
9. Further development of lightweight protective masks for civilians.



H. Emergency Welfare

In the event of attack it will be necessary to provide emergency feeding facilities for an estimated 10 million victims, additional feeding facilities for civil defense workers, emergency bedding and lodging facilities for about 6.7 million persons, assistance in locating and reuniting large numbers of family members, temporary financial assistance for those in want, and welfare services in connection with evacuees.

Most of the equipment necessary for emergency welfare services will be available from surviving local community outlets, such as warehouses and retail stores. However, there will not be available in sufficient quantity such essential equipment as large stockpots, gasoline burning stoves and thermal-food carriers for emergency feeding, and cots, pads and blankets for bedding. FCDA has recommended that deficiencies in these items be partly made up under the Federal contributions program. As of December 31, 1953, approximately \$140,000 in Federal and State matching funds had been obligated for the purchase of such items.

A recent significant accomplishment in the emergency welfare field has been the development of an Emergency Mass Feeding Instructor Training Program. Jointly developed by the FCDA and the Army Quartermaster Corps, this training program was pilot tested with representatives of 20 national organizations associated with quantity feeding operations. Initial instructor courses have now been given in every FCDA region with the Army providing facilities; more than 350 instructors have undergone training.

Possibilities for the use of surviving institutional type kitchens in restaurants, hotels, schools, churches, and halls have been greatly improved through the development of a program for the emergency use of liquified petroleum gas -- propane and butane. In cooperation with the Liquified Petroleum Gas Association, advice and guidance on the emergency conversion of cooking and heating equipment for the use of this alternate fuel are being given to the States.

I. Engineering

The large amounts of engineering supplies and equipment now in the hands of Public Works Departments and private contractors are generally sufficient for most civil defense purposes. However, there is a dangerously short supply of certain critical equipment which is essential to the emergency restoration of vital facilities in event of attack. Among these items are emergency, quick-connecting



type, light weight water pipe; portable water pumping units; water purification units; mobile chlorinators; and portable generators. Such equipment would be necessary to provide water for fire fighting, as well as for the minimum essential medical and household purposes, and to provide minimum light and power requirements for surviving hospitals and other buildings which would be used for first-aid stations, mass care centers and other civil defense purposes. Present plans call for the stockpiling of such items by the FCDA in at least 70 storage sites located throughout the country.

As of December 31, 1953, Federal funds had been obligated and contracts awarded for approximately 13% of the items required; about 11% of total requirements had been delivered to 40 storage locations.

A permanent testing unit representing a complete installation of FCDA stockpiled engineering equipment has been established at the National Civil Defense Training Center. This installation is being used by FCDA engineers and local civil defense engineering water works and fire department personnel as a demonstration and test unit.

The FCDA has established a model plan for conducting engineering seminars in areas where civil defense officials desire to exchange information on the various civil defense engineering procedures and to demonstrate the application of FCDA stockpiled engineering equipment for the benefit of local water works personnel. A field demonstration of FCDA engineering equipment was given at Pittsburgh, Pennsylvania, early in December for supervising engineers who will form a cadre of instructors to train personnel in their respective areas. Other equipment demonstrations have been held in various target areas in connection with regularly scheduled civil defense exercises.

J. Fire Defense

The overwhelming destructive effects of atomic bombs are in large part caused by the fires they create. Mass fires will probably result in many of our major cities struck by atomic bombs. In all cities the hazard of overwhelming numbers of individual fires must be met. These fires in their initial stage must be fought in the main by individuals -- householders, fire guards, fire wardens, etc. -- trained in great numbers to put out fires when small. This will permit the professional fire services to devote their full capacity to the mass fires.



The Nation's fire fighting resources are being augmented by fire pumpers, hose and other equipment being procured under the Federal contributions program. Based on current assumptions, it is estimated that the number of pumpers required in event of attack is approximately 8,100 above peace-time strength. However, it is anticipated that the inclusion of replaced equipment in reserve status for an additional two years will make an additional 1,400 pumpers available for civil defense, making a net deficiency under present assumptions of 6,700 pumpers.

Federal-State matching funds obligated through December 31, 1953, will provide for the procurement of 1,373 fire pumpers or approximately 20% of the net deficiency. In addition, such funds will provide for 434 portable pumps, 324 portable generators, more than 2,100,000 feet of two and one-half inch hose, about 685,000 feet of one and one-half inch hose, and other minor items of equipment. Fire pumpers purchased with matching funds will be delivered to all but 18 of the 56 States and major Territories and Possessions and will be located within supporting distance (150 miles) of one or more of each of the Nation's critical target areas. (See Appendix 4).

From results of tests made by other Federal agencies under atomic bomb conditions, in consultation with the fire experts of the FCDA, it is now known that the most effective defense against mass fires is in the reduction of peace-time fire hazards such as cleaning up combustible materials. An extraordinary effort in this field will minimize the fire threat and enable the civil defense fire forces to do a more adequate job on the big fires which are inevitable.

K. Police

FCDA has developed a national police services program to provide for the maximum utilization of existing police manpower, equipment and facilities in event of an attack. Guidance is also being given in recruitment campaigns to enlist sufficient numbers of volunteer auxiliaries to cope with the greatly expanded requirements which would be created by an enemy attack. The problems include control and regulation of traffic, coordination of all law enforcement activities, prevention of mass hysteria and mob action, and explosive ordnance reconnaissance.

Emergency traffic control has been given particular attention. Principles and techniques have been developed and are being presented by FCDA to key police traffic supervisors, traffic engineers and civil defense highway transportation officials. Such a training program has been initiated in all of the FCDA regions. As of December 31, 1953, a total of 357 persons had attended these courses.



L. Rescue

It is estimated that approximately 10% of all casualties will be so entrapped as a result of structural collapse as to require the services of highly trained and equipped rescue squads for their release.

Present minimum planning goals call for training and equipping 10,000 rescue squads of 26 men each. Determination of optimum goals is subject to further study of the impact on rescue requirements of the policy of limited evacuation discussed elsewhere in this report.

Required rescue squad equipment consists of trucks and trailers with special rescue tools and equipment. A small start in procuring such trucks and equipment has been made with Federal-State matching funds. Funds obligated through December 31, 1953, will provide for 260 rescue trucks with tools, 68 trucks without tools, and 339 complete sets of tools. Additional amounts have been obligated for the purchase of rescue training sets and minor items of rescue equipment.

There has been evidence of an increasing awareness of the need to establish a rescue service capable of dealing with the complex rescue problems that would exist after an attack. As of December 31, 1953, 2,755 persons had attended rescue courses at FCDA training schools, an increase of over 500 since June 30, 1953. The American Legion and the Amvets have taken action to promote formation of rescue squads throughout the Nation. Federal matching funds have been allocated for a total of 39 rescue training facilities in the States. In some communities, industry has taken the lead to provide rescue equipment and training facilities.

M. Transportation

The replacement value of the transportation plant and merchant fleet of the United States is in excess of \$190 billion, exclusive of such items as value of civil airports, navigation improvement of inland waterways, harbors, etc., and privately owned pleasure cars. The operational capability of this plant in time of war could be a vital factor to national survival. Estimates of prospective enemy capability involve massive enemy attacks affecting a large number of important centers of transportation. Specific results affecting transport would be (a) disruption and damage of all types of air, water, and surface transportation and facilities; (b) a sharp acceleration of military transportation needs; (c) immediate



O. Civil Defense in Large Facilities

There is evidence over the last six months of an increasing awareness in industrial and commercial establishments of the need to plan and develop their own self-protection organizations. The response to FCDA sponsored conferences dealing with this phase of civil defense preparation has been encouraging although not completely satisfactory. The self-protection programs within Federal establishments also have not been developed sufficiently although there has been some improvement.

Provision for rapid tax amortization of protective construction by defense industries in critical target areas is currently in effect under an agreement between ODM and FCDA. Although only three applications have been processed, interest has increased recently and some industries are providing protective facilities in new construction without Federal financial stimulus. In civil defense facilities receiving RFC assistance, construction is prohibited in the most vulnerable areas and protective construction required wherever a project is located in a zone of probable damage.

Further impetus to the program in private industry could also be given by other Federal actions, such as requirement of essential protective measures within plants receiving Federal contracts.

Some progress has been made in plans for reducing the multiple Federal contacts with industry on the general subject of preparedness. This planning is being carried on through the Facilities Protection Board dealing with Federal agencies at the Washington level, and through the Regional Defense Mobilization Committee. These activities, however, need more emphasis and greater stimulation. With the proper definition of responsibilities with respect to sponsoring protection programs at the national level, it can be reasonably anticipated that elimination of many of the problems in the field establishments will follow.

P. Liaison With Other Federal Agencies and Foreign Governments

The FCDA is charged by law with making maximum use of the existing facilities and resources of other Federal agencies. Under Executive Order 10346, the President has directed Federal agencies to develop plans for continuity of essential functions and for making available their remaining resources for civil defense purposes in an emergency. Since the issuance of this order, the FCDA has initiated a program of delegation of civil defense responsibilities to appropriate agencies.



and heavy demands for transportation of all types from the civil defense authorities; (d) a large volume of freight in the hands of carriers which could not be delivered, thus necessitating temporary storage and reconsignments; and (e) the necessity for prompt and accurate assessment of damage, as the foundation of decisions to reroute and to provide substitute means of transport.

FCDA in cooperation with ODM and other Federal agencies is developing a plan for providing Federal coordination and operational control of interstate transportation and assuring its maximum continuity of operation under emergency conditions. The Subcommittee on Civil Defense Transportation of the ODM Committee on Transportation and Storage is working on this problem of integrating the difficult transportation requirements of civil defense -- a new factor with which the United States has not had previous experience -- into the total transport requirements of the Nation under full war conditions.

Basic to the implementation of this plan is a system of emergency operational facilities established in secure locations and capable of housing the essential representatives of the control agencies of Government, claimants for essential service and operational control units of the transportation industry. It is estimated this system will require a national operating center, seven regional operating centers and thirty-seven transportation gateway centers, augmented by facilities established by State and local governments wherever necessary.

N. Wardens

The FCDA is providing technical guidance to the States in the development of a warden service program which is designed to organize business and commercial districts for civil defense. At the neighborhood and block level, the warden represents basic civil defense leadership, and provides support for the other civil defense services until their professional teams can arrive to take over.

Much of the equipment needed by wardens will be found in the neighborhood in which the service is organized. Fire extinguishers of the waterpump-tank type constitute the largest equipment deficiency. An analysis of target areas indicates that 200,000 warden block posts are required. Based on a minimum average of four fire extinguishers per warden block, a total of 800,000 extinguishers are needed. A small start has been made in procuring these extinguishers by the use of Federal-State matching funds. As of December 31, 1953, funds had been obligated for less than 2,000 of these extinguishers.



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Steering committees to spearhead civil defense activities have been organized in major departments and agencies, but progress is still being impeded because of the fact that standards upon which government continuity programs must be based have not yet been established by ODM. Until such guidance is given, Federal resources available for civil defense cannot be accurately identified.

On the international front there have been several meetings of the U. S.-Canadian Joint Committee on Civil Defense. Working groups have been established and plans and methods of civil defense assistance between the two countries are continuing. FCDA has also participated in the deliberations of the NATO Committee on Civil Defense to which an FCDA member is the United States Delegate.

Q. Supplies and Equipment

Civil defense planning contemplates the fullest possible use of existing supplies and equipment. However, a full-scale attack on our key cities would create immediate needs for many materials which could not be met from resources available locally or through mutual aid or mobile support. To meet this problem, a program of pre-attack stockpiling of critical items has been established.

Under the Federal stockpiling program FCDA is implementing a plan whereby an attacked area can be assisted in meeting its immediate post-attack needs. As local supplies are depleted, they will be replaced by Federal stocks stored in Federal warehouses and other storage locations. According to this program no critical target area should be more than four hours shipping distance from Federal reserve supplies.

FCDA is utilizing the Public Buildings Service of the General Services Administration for the operation of all Federal warehouses. Space is secured wherever possible on a rent-free basis. At present, space in five warehouses and 40 other storage locations has been obtained without cost to FCDA. Use is made of the Armed Services Medical Procurement Agency for procuring medical supplies and equipment and of the Federal Supply Service, GSA, for procuring engineering, training and education, rescue and miscellaneous categories of supplies and equipment. FCDA is also utilizing other Government agencies for technical advice in supply activities, development of supplementary emergency supply sources, and procurement of special types of supplies and equipment.



FCDA's stockpiling program will eventually require approximately 24.2 million cubic feet of warehouse space for medical supplies and equipment. These supplies and equipment are to be stored in approximately 46 warehouses located throughout the United States. The Federal stockpiling program will also require 72 cold storage locations for blood sera and 70 storage locations for emergency engineering supplies and equipment. As of December 31, 1953, FCDA had acquired space in 14 warehouses providing for about 5.7 million cubic feet. In addition, FCDA has obtained 40 cold storage locations for blood sera and 40 storage locations for emergency engineering equipment. (See Appendix 5). This space was generally sufficient to store items procured through FY 1953. However, because of limited Federal appropriations, FCDA cannot presently apply the principle of having Federal reserves of material within four hours shipping distances of all critical target areas.

As of December 31, 1953, \$97.9 million had been obligated for Federal emergency medical supplies and equipment and \$6.0 million for Federal emergency engineering supplies and equipment. Approximately \$68.5 million worth of medical items had been delivered to warehouses and \$5.1 worth of engineering supplies to storage locations.

Through Federal purchasing agencies, the FCDA has assisted the States in the procurement of supplies and equipment under the matching funds program. As of December 31, 1953, FCDA had forwarded purchase authorizations in the amount of approximately \$21.8 million. Approximately 75% of such supplies and equipment procured by the Federal Government had been delivered to the States. (See Appendix 6). Beginning with the fiscal year 1954 program, FCDA is advocating that with few exceptions, matching funds items be obtained through State procurement.

R. Tactical Operations

The objective of the civil defense tactical operations program is the coordinated employment and deployment following attack or other disaster of the several forces comprising a civil defense organization.

FCDA advanced this program in 1953 by releasing in July a technical manual entitled "Civil Defense Urban Analysis". This manual provides specific guidance to urban areas for determining their most likely targets for enemy attack, for developing plans for the effective use and control of civil defense services and community facilities, for reducing or eliminating in advance of



attack as many physical hazards as possible, and for estimating as quickly as possible following an attack the total casualties and extent of damage to structures and facilities. As of December 31, 1953, six critical target areas had completed civil defense urban analyses and 29 others had such analyses in process.

During 1953 FCDA prepared maps for each of the 92 critical target area cities which show the distribution of daytime and nighttime population within the cities. These maps are basic to preassessment of casualties and damage. The civil defense directors of the cities and States involved have been provided with a set of these maps.

As of December 31, 1953, FCDA had completed defining vulnerable urban districts for 31 critical target area cities. These boundaries are used as guides for locating critical target area civil defense facilities outside of probable damage zones and for determining whether civil defense project applications for Federal assistance under Section 409 of the Civil Defense Act conform to FCDA minimum standards with respect to location and protective construction.

With the cooperation of the U. S. Department of Agriculture, several pilot projects have been started to develop generally applicable techniques for rural and semi-urban civil defense.

S. Research and Development

The rapid and continuing development being made in weapons, weapons systems and techniques of war, necessitates increased research and development for civil defense. Significant research accomplishments have been made. (See Appendix 7). However, the civil defense program has a serious deficit of data in many problem areas.

Project East River was a broad analysis of the measures necessary for devising an effective civil defense of the United States against all forms of attack. Its conclusions and recommendations are proving of great value in FCDA guidance. As outgrowth of the report, a Scientific Advisory Committee is now being established by the National Academy of Sciences to advise FCDA on research and development problems. However, there is urgent need for another project of this type aimed at specific civil defense problems such as pre-attack dispersal of people from target cities, need for shelter for non-dispersed persons and need for reconsidering the role of mobile support in the post-attack tactical plans of cities.



To insure that full use is made of past experience, FCDA has made a review of all available World War II documents. The ensuing reports summarize those data of significance to civil defense in three fields: physical damage; the national economy; social organization, behavior and morale of people under the stress of bombing.

Studies are continuing of the results of the atomic test series conducted at Las Vegas last spring. The civil defense aspects of these tests included the effects of atomic explosives on passenger automobiles, mail trucks, typical residences, basement and backyard shelters, building components (curtain walls and partitions) and certain drugs. Plans are underway for civil defense participation in a second atomic test. These plans call for technical tests on dwellings and on a series of materials and devices, the bulk of which, it is expected, will be supplied by industry; there will again be a phase on civil defense trainee participation.

In the past, FCDA has conducted three surveys to determine public attitudes and opinions concerning the threat of atomic war and related topics of significance to civil defense. The last such survey was conducted in August of 1952. A fourth survey is now underway to determine the current status of public opinion on these and related topics. The survey will consist of a national sample of the population of both urban and rural areas. A preliminary report is due on April 1; the final report is due on August 31.

Under a contract administered for FCDA by the Office of the Chief of Engineers, Department of the Army, Lehigh Institute of Research is conducting comparative studies of the blast resistance of various types of buildings. These studies are expected to shed light on design and cost criteria for the guidance of architects and engineers.

During the last six months the FCDA intensified its work with the Committee on Disaster Studies of the National Research Council. This Committee serves as a clearing house for reports, bibliographies, and materials on both peace-time and war-time disasters; gives guidance and counsel on current questions and problems; investigates and reports on pertinent aspects of peace-time disasters; and sponsors research projects in universities. To date, the Committee has sponsored some two dozen major research projects including those conducted by field teams and those carried out by universities under contract.



Two economic studies have been conducted under contract with the Stanford Research Institute. The first was an investigation of the degree of coincidence of population and industry in the larger metropolitan areas of the country. The second was the development of a method for use in measuring restoration costs of physical assets which might be damaged or destroyed by air attack on the country.

In various instances work of significance to FCDA has been carried out by other Federal agencies. Studies conducted by the U. S. Forest Service have made it possible to evaluate the potential fire threat to American cities from ignition of combustible materials outside and around buildings by exposure to direct thermal radiation of atomic explosions. The Department of Health, Education and Welfare and the Department of Agriculture have provided invaluable scientific consultation leading toward development of biological warfare defense measures. As a result of a recommendation from Project East River, the Army Chemical Center is undertaking project TRAC -- Thermal Radiation Attenuation Clouds -- and, in cooperation with FCDA, is testing the economic feasibility of the concept as applied to civil defense purposes, through a theoretical, logistical-type exercise based on a specific target city. Largely with Army funds, but utilizing a small amount of FCDA funds, the Center has also developed and tested a cheap expendable civilian gas mask, designed to fit all age levels, which may be purchased by the public. It is planned, when the mask is finally standardized, to make it available to the public through regular retailing channels.

T. Cost of Civil Defense

1. Federal

On the basis of FY 1955 planning assumptions, the total cost of civil defense to the Federal Government for Federal stockpiles and contributions is estimated at \$639 million, exclusive of the amounts for protective facilities which cannot be estimated at this time. As of December 31, 1953, \$161 million had been made available for these purposes (Federal appropriations through FY 1954). (See Appendix 9). In the FY 1955 Budget, the President has requested \$75 million more.

2. State and Local

The cost to the State and local governments for matching funds exclusive of funds for protective facilities is estimated at \$215 million. As of December 31, 1953, the State and local governments had obligated \$37 million for such purposes.