FEDERAL EMERGENCY MANAGEMENT AGENCY
STATE AND LOCAL GUIDE
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GUIDE FOR INCREASING LOCAL GOVERNMENT CIVIL DEFENSE READINESS DURING PERIODS OF INTERNATIONAL CRISIS

NOTE TO THE READER

This 1990 State and Local Guide replaces CPG 1-7 of April 1979 and May 1981. Important features are:

- New material is added on local continuity of government (COG) preparedness and actions (at pages 1-2 and elsewhere in this guide).

- New material has been added on *expedient actions to protect communications and other electronic equipment from the electromagnetic pulse (EMP) effects of nuclear detonations* (at pages 7 to 16 and elsewhere). Such actions would be of *critical importance* should a crisis escalate to an attack on the United States, in order to preserve local capabilities to communicate during in-shelter and post-shelter periods. This in turn is essential to continuity of government operations to support the public.

- New material has been added on actions to keep citizens' radiation exposure to a minimum in situations where radiological instruments are not available in public shelters, and where people in public (or home) shelters receive no information on the fallout radiation hazard via the Emergency Broadcast System. (See pages 21-22.)

- Section 6 contains guidance for "host area" governments on rapid ad hoc planning to receive evacuees, in case of spontaneous or directed evacuations.

- Section 7 contains guidance for risk areas on ad hoc planning for crisis evacuation.

- Instructions and illustrations are provided at pages 39 and 77 on (1) techniques for upgrading the fallout protection of existing structures by crisis actions; and (2) field-tested designs for expedient shelters. *These illustrations can be reproduced in local newspapers, if necessary, during a crisis.*

- Sections 3 and 17 contain important information on actions with potential to save many millions of lives in case of nuclear attack. This information is based on research and stresses the need for shelterees to be in the maximum protective posture against blast and fallout, also citizen action for fire prevention and control.

- Section 21, on Increased Readiness measures for industry, outlines actions that can be taken during a crisis to protect essential equipment.

- This guide is printed so that *the section of interest to a specific local official (such as the chief of police or fire chief) can be detached and given to him.*

- The quidance series is changed to "State and Local Guide".

CONTENTS

In this publication, "he," "him," and "his" represent both the masculine and feminine genders.

ACRONYMS USED IN THIS GUIDE

CAP	Civil Air Patrol
CB	citizen's band (radio)
CD	civil defense
COG	continuity of government
CPG	Civil Preparedness Guide
EBS	Emergency Broadcast System
EMP	electromagnetic pulse
EMS	emergency medical services
EPI	emergency public information
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
HS	Home Study
IG	Instructor Guide
IR	Increased Readiness
PF	protection factor
FWE	public works engineering
MARS	Military Affiliated Radio System
NAWAS	National Warning System
NUDET	nuclear detonation
RACES	Radio Amateur Civil Emergency Services
RADEF	radiological defense
RDO	radiological defense office
RM	radiological monitor
RRT	Radiological Response Team
SAFE	Support Assistants for Fire Emergency
SCH	Shelter Complex Headquarters
SLG	State and Local Guide
SM	Student Manual (when used with a FEMA publication number) shelter manager
SOP	standard operating procedure
SRM	shelter radiological monitor
TO	training officer
TWX	teletypewriter exchange

GUIDE FOR INCREASING LOCAL GOVERNMENT CIVIL DEFENSE READINESS DURING PERIODS OF INTERNATIONAL CRISIS

Introduction

This publication provides guidance for State and local chief executives and governments on measures to increase local government civil defense readiness in a time of severe international tension. Such measures taken by local authorities could save millions of lives if the crisis culminated in a nuclear attack. The sections describe local government Increased Readiness (IR) actions in a number of functional areas, such as briefing key officials, increasing Emergency Operating Center (EOC) manning levels, and increasing the operational readiness of public shelter.

While this guide addresses actions to be taken during a crisis that could escalate to a nuclear attack, many of these actions are equally appropriate should natural disaster or a peacetime emergency threaten (hurricane, terrorist threat to a U.S. city, etc.).

The IR actions in each area are arranged in steps or "ladders," from initial review of plans through to maximum readiness, and **the materials are printed so that the section of interest to a specific local official (such as the chief of police) may be detached and given to him.** The steps included in each section are intended as a checklist or point of departure, to be used in developing specific and more detailed local plans.

It should be noted that IR actions are *not* a substitute for day-to-day effort in building local readiness. **There is no "instant civil defense."** But regardless of the degree of progress that a given locality has achieved in its civil defense program, IR actions would be essential in a period of increased tension.

Local Government Actions in Periods of International Crisis

Local IR actions in periods of crisis would be authorized and directed by the chief executive of the local jurisdiction, and carried out by the civil defense (or emergency management) director* and other local department heads and their staffs. To avoid undue public concern, local chief executives and key officials should exercise good judgment in initiating and carrying out IR measures, if specific advice has not been received from the State or Federal level.

Actions like meetings of key local officials to review civil defense plans would probably not give rise to substantial concern even if they were reported by news media. On the other hand, manning public shelters with shelter managers and radiological monitors, or advising citizens to improvise additional fallout protection in their homes could cause considerable public concern.

Figure 1 (foldout) lists the IR actions described in the following sections, and groups them into four classes, each related to the level of public concern they might create. In the absence of specific advice from the State or Federal levels, the checklist provided in Figure 1 will help local executives select the IR actions they deem most appropriate.

If in doubt as to the propriety at a given time of specific Increased Readiness actions, State civil defense offices should be consulted. (States may in turn consult Regional offices.)

The ladders of actions illustrated in Figure 1 may be used as a checksheet, during either civil defense exercises or crisis situations. Local chief executives or civil defense directors may find it convenient to detach the Figure 1 list and use it as a desk-top sheet on which to check IR actions taken by the local officials responsible for the various functional areas covered.

** A variety of terms are in use for the individual responsible to coordinate local emergency preparedness, e.g., emergency management director, emergency program manager, emergency services coordinator, civil defense director. The latter term is used in this guide as a matter of convenience.*

Continuity of Government

It is essential that governments at all levels have a Continuity of Government (COG) capability to preserve, maintain, and—if necessary—reconstitute their ability to function in emergencies, including attack.

COG preparedness and planning is described in CPG 1-10, Guide for the Development of a State and Local Continuity of Government Capability, July 1987. Preparedness and planning elements include the following:

1. *Succession to Office*—At least three emergency interim successors are designated to exercise the powers and discharge the duties of executive, legislative, and judicial offices.

2. *Predelegation of Emergency Authorities*—Emergency-related legal authorities exist for government operations under emergency conditions, and are delegated to the appropriate officials.

3. *Emergency Action Steps*—Checklists or procedures specify actions that senior officials may need to take in response to emergency conditions.

4. *Emergency Operating Center*—A protected site exists from which civil government officials exercise direction and control in an emergency, including the necessary communications and other capabilities essential to continuing operations in an emergency.

5. *Alternate Emergency Operating Center*—An alternate EOC is available from which emergency operations can be directed if the *primary* EOC (4 above) becomes inoperable during an emergency or must be evacuated.

6. *Safeguarding Vital Records*—Vital records are physically protected through duplicate copies, dispersal, or safe and secure storage. (Vital records include those essential for emergency operations [e.g., utility system maps, locations of emergency supplies and equipment], governmental functions, and protection of the rights and interests of the public.)

7. *Protection of Government Resources,*

Facilities and Personnel—Plans address dispersal of resources or facilities, improving protection of facilities, and training personnel in protection measures.

Electromagnetic Pulse (EMP)

In addition to blast and heat, a nuclear detonation also produces electromagnetic pulse, or EMP. This can cause large voltages and currents in electronic and electrical equipment, which may cause serious damage.

Because high-altitude nuclear detonation, 50 miles or more above the earth, could result in EMP over an area 1,000 miles or more in diameter, a *potential EMP threat must be anticipated in every locality.*

Section 2 of this guide provides information on actions which can be taken during an international crisis to protect electronic and electrical equipment against EMP. Since few people, however, are familiar with EMP or protective measures, during a period of developing crisis this information should be distributed as widely as possible—throughout local tgovernment, industry, broadcast stations, etc.

A *local EMP Protection Coordinator should be appointed* to assure that this vital function is carried out.

Crisis Evacuation

Crisis evacuation planning is intended to provide an *additional option* for protecting the population—a capability for orderly evacuation of people from potential high risk areas to lower-risk host areas, over a period of several days if time permits during a crisis. Planning is esssential for reception and care of evacuees in host areas (including feeding and temporary lodging), development of fallout protection, and protecting the population in-place in the event time or circumstances preclude crisis evacuation.

A severe crisis could result in considerable "spontaneous evacuation" from U.S. risk areas. The number of spontaneous evacuees cannot be predicted with accuracy, but could double or triple low-risk area populations. It is therefore essential to make plans for this likely influx of people. Accordingly, this guide contains a checklist (Section 6) on actions a host jurisdiction should take to

prepare for the arrival of spontaneous evacuees. Section 6 could also be used as the basis for developing an ad hoc host area plan should evacuation be implemented before a community had prepared a hosting plan in peacetime. Similarly, Section 7 outlines ad hoc planning for risk area jurisdictions applicable in the same kind of situation. Sections 6 and 7 would also be helpful should a developing peacetime hazard like a hurricane or a terrorist threat require rapid development of plans to evacuate threatened areas.

Increased Readiness Reporting

Government officials at all levels—city, county, State, and Federal—would urgently need information on IR actions that had been taken by local jurisdictions throughout the country, and also on public response to the crisis situation—the extent of any spontaneous evacuation, for example. Such information would be needed as a basis for governmental actions and for providing information to the public. Developing spontaneous evacuation, for example, would indicate a need for host area counties to be prepared for an influx of evacuees. Above-normal food or gasoline sales could require governmental requests to the public to refrain from unnecessary purchases. Accordingly, the civil defense (CD) emergency operations reporting systems include provision for IR reporting.

State and Local Action

All local governments should develop plans, standing operating procedures (SOPs), authorities, and the operational capability to improve readiness quickly in a crisis. IR planning should be a priority program activity.

Local IR plans should be adapted to local conditions and needs, specifying *who does what, where, and when.* These plans should be based on the numbered lists of activities in the following sections, and should be attachments or annexes to the appropriate parts of local CD plans.

State plans should cover guidance and support to local governments during an IR period.

SECTION 1

BASIC ACTIONS TO INCREASE LOCAL GOVERNMENT READINESS

This section outlines steps which local governments can take during a period of severe international tension to increase their readiness to continue to carry out their responsibilities throughout the crisis and to mount emergency response operations if the crisis culminates in attack.

The actions outlined are of a general nature, relating mainly to briefings for key officials plus review of this guide, as well as review and updating of local government Increased Readiness (IR) plans. More detailed IR actions are outlined in following sections, but the detailed actions they contain would normally be based on decisions taken by the head of government and his key officials during the briefing sessions and periodic meetings suggested in this section.

Detailed IR plans and Standard Operating Procedures (SOPs) should be adapted to local situations and needs. They should specify who does what, where, and when, and should include specific actions based on the numbered IR actions in this guide. IR plans and SOPs should be part of the local civil defense (CD) emergency operations plan.

If it appears that the briefings are attracting the attention of news media representatives or of the general public, consideration should be given to issuing an official public announcement. An example of such an announcement appears at the end of Section 3 of this guide.

Actions to Increase Local Government Readiness

1. *Brief Head of Government and Review IR Guidance*

CD director brief head of government (mayor, city manager, board of county commissioners, etc.) on situation and on IR guidance (this guide) and local plans, and recommend actions to be taken. Review plans for movement of head of government to Emergency Operating Center (EOC) if an increased level of readiness is indicated.

Review local continuity of government (COG) plans (e.g., succession to office, delegation of emergency authorities). Update lists of successors and brief key successors on the situation.

Brief head of government on *critical importance of actions to protect communications and other equipment from electromagnetic pulse, or EMP* (See Section 2 of this guide). *Request appointment of local EMP Protection Coordinator.*

(Other matters may be covered in this briefing—for example, EOC and direction and control readiness, as discussed in Sections 8 and 9 of this guide.)

2. *Brief Department Heads*

Head of government and CD director brief department heads on situation and on IR guidance and plans of the jurisdiction. Head of government should indicate actions to be taken by departments (e.g., review departmental IR plans, update plans as required, brief personnel, determine needs for additional supplies, etc.).

Brief department heads on *importance of EMP protection* (issue copies of Section 2 of this guide).

Head of government of CD director should provide for frequent meetings of department heads for the duration of the IR period (e.g., meet each morning with head of government and/or CD director to review situation and actions already taken and to agree on further actions).

Head of government and CD director review plans for movement to EOC of department heads and key staff, in accordance with local plans, if an increased level of readiness is indicated. Review EOC assignments of departments with emergency missions. Review arrangements to safeguard vital records.

3. *Brief Key Government Agency Staffs and Review Plans*

Assemble key staff of all agencies to review IR plans and SOPs. Stress importance of *EMP protection.*

Update as required EOC personnel assignments, as well as succession lists to all key positions.

Provide for 24-hour liaison throughout the government, to include key officials and department heads, as well as liaison with appropriate military headquarters.

Key departments determine and submit needs for additional supplies, equipment, or personnel for emergency operations.

4. *Review and Update Procedures for Support of Local Government Forces*

Review and, as necessary, update or develop procedures for support of local government forces. These may include procedures for expedited procurement of essential supplies or equipment, and hiring of additional personnel.

Review emergency-related legal authorities, including legal authority for expedited procurement, and review availability of contingency or other funds for use in an IR period. As necessary, convene city council or other local legislative body to secure legal authority and/or authority to expend local funds to increase readiness and for other emergency purposes.

Review requests for additional supplies, equipment, or personnel submitted by local departments; establish priorities for procurement; and issue instructions to local purchasing agency.

5. *Review Assignments of All Local Government Employees*

All departments review plans for continuity of operations during IR, shelter, and post-shelter periods.

Ensure that all employees not having specific emergency assignments are briefed on plans for, and their role in, the continuation and restoration of local government.

Stress importance of *EMP protection.*

Advise all employees to review shelter and survival plans.

SECTION 2

ACTIONS TO PROTECT EQUIPMENT FROM ELECTROMAGNETIC PULSE (EMP)

This section outlines actions which local governments can take during crisis periods to protect civil defense and related equipment from electromagnetic pulse (EMP) effects. Such equipment includes communications equipment, radios, power generators, and electronic devices susceptible to EMP damage.

Because of the critical importance of actions to protect equipment from EMP, the head of government should appoint a local EMP Protection Coordinator (see Section 1 of this guide) to supervise all local EMP protection actions.

Very few—even communications personnel—are familiar with EMP effects or protective measures. Accordingly, this section should be reproduced locally in large quantities, so copies can be given to everyone requiring such knowledge. Copies should be provided—as a minimum—to department heads and key departmental officials of local government down through communications personnel (see Section 1, steps 2 and 3). Copies should also be provided for local industries and other groups with equipment susceptible to EMP damage.

Description of EMP and Its Effects

In addition to blast and thermal radiation, a nuclear detonation also produces electromagnetic radiation over a broad range of frequencies. This radiation—the electromagnetic pulse (EMP)—from the nuclear explosion can be picked up by wires and other conductors. It can cause large voltages and currents in electronic and electrical equipment which may cause serious equipment damage.

In the case of a high-altitude detonation, 50 to 400 miles above the earth, the EMP could cover an area thousands of miles in diameter. For a surface- or near-surface burst, the EMP is largely confined to the immediate blast-damaged area.

A significant implication for operational planning is that a potential EMP threat must be anticipated in *every* locality.

EMP Effects on Equipment

EMP can produce very high voltages and currents in power lines, radio antennas (30 inches or longer), and other electrical conductors.

The effects of EMP are somewhat similar to those of lightning striking a power line or a long antenna. However, lightning protection devices may not protect against EMP. The EMP voltage can burn out radio transmitters or other electrical equipment. Equipment with micro-circuits and semi-conductors is especially sensitive to EMP damage.

Commercial broadcast station equipment, as well as police and other local government radio base equipment, could be damaged by the EMP pulse if connected to a large antenna or to commercial electric power at the time of high-altitude nuclear detonations.

Mobile radio units are likely to remain operable, because they have relatively short antennas and use battery power. Both telephone and radio systems, as well as automated switching centers, are vulnerable to EMP effects. In general, expected damage may range from minor interruption of function to actual burnout of components.

The following conclusions are valid regarding transistorized communications equipment:

a. Transistorized radios can be safely operated with antennas no longer than 30 inches in length.

b. Typical radio receivers with self-contained batteries and loopstick-type antennas are *not* susceptible to direct damage from EMP fields; however, their antennas are circuits and may pick up damaging amounts of energy if located too close to conductors that might carry heavy EMP-produced currents.

EMP Protection for Civil Defense Equipment

1. General Instructions for All Equipment

Disconnecting all conductors (power wires, signal wires, and antennas) protects equipment from conducted EMP pick-up on wiring external to the chassis. The power cable should be removed. Sensitive equipment also requires protection from EMP pick-up on wiring within the chassis. Do this by putting the item in a closed metal container or wrapping with aluminum foil or metal screen. *When in doubt, protect.*

a. Disconnect all electrical and electronic equipment not essential to immediate operations by unplugging the line cord from the chassis end of equipment, if possible.

b. Disconnect from transmitters and receivers all antennas over 30 inches in length, and any external antenna leads. Remove or shorten all attached conductors. Remove or roll up power leads. Turn off main breakers and circuit breakers.

c. *Shift to emergency power if an attack appears imminent, at the LATEST when attack warning has been received.* Disconnect Emergency Operating Center (EOC) and all radio base stations from commercial power. Disconnect the commercial electrical service at the service pole and ground the customer service end, or remove the electrical meter and ground the customer terminals. Transfer loads to emergency generators.

d. Rely on telephone or other wire-line systems during an attack period as long as they are operational. If use of radio is essential, *use only one base station at a time,* keeping all other systems disconnected from antennas, cables, and power lines.

e. Employ mobile equipment as an alternative base station, using mobile-to-mobile communications when feasible to control field units of police and other forces.

f. *Use as little equipment as possible, as infrequently as possible.* Keep equipment in protected configuration as much as possible.

g. Place radios, calculators, electronic watches, etc., inside a metal container or wrap with aluminum foil or metal screen.

h. Contact commercial radio stations and, when attack appears imminent, urge that back-up transmitters be used (if available). Stations without EMP protection may protect themselves by going off the air and disconnecting and grounding their audio, transmitting equipment, and antenna system.

2. *Instructions for Specific Equipment, Applications, and Situations*

a. *Vehicles.* Electronic ignition and computer controls may fail.

- Gasoline-powered trucks and cars: Electronic ignition may fail. Requires replacement.
- Diesel trucks and cars: Engines can run without electronics (except for electronic computer-controlled fuel injection). Jury-rig battery power for starting.
- Magneto-equipped motorcycles and pre-1974 trucks and cars should suffer no damage.

b. *Aircraft:* Electronic instruments and radios may fail.

- Flight-essential equipment: No damage to magnetos, magnetic compass, batteries, aneroid altimeter, mechanical fuel pumps, etc. However, electrical fuel pumps should have EMP protection.
- Radios and navigation equipment: Remove and place in metal container, if possible. Keep an emergency Citizens' Band (CB) walkie-talkie in metal box.

c. *Emergency Power Generators:* The electronic control system may fail.

- Small, portable generators: Disconnect all wires and extension cords.
- Large, stand-by generators: Disconnect from commercial power and from loads. Disconnect control wires for automatic start-up.

d. *Farm Machinery:* Electronic controls may fail.

- Tractors: No damage if magneto-equipped. Electronic ignition may fail. Requires replacement.

- Electric water pumps: Disconnect pump from commercial power sources.

- Electric fuel pumps on equipment may fail.

e. *Police, Fire, Ambulances, and Emergency Equipment:* Electronics may fail.

- Radios, PA systems, sirens: Disconnect all wires to cabinets. Remove equipment and place in metal container when possible.

- Electronic ignition of vehicles, computerized electronic controls: Procure replacement components, pre-crisis. Develop manual by-pass methods where possible.

- Remove sensitive components and place in metal container.

- Keep small portable generator to recharge vehicle batteries.

f. *Construction Equipment:* Electronic controls may fail.

- Electronic ignition, electronic fuel injection: Remove sensitive components, place in metal container. Keep inventory of replacement components on hand.

- Develop methods for mechanical/manual by-pass controls. Remove sensitive components and place in metal container, where possible.

g. *Railroads, Trains:* Automatic signalling equipment may fail. Communications equipment may fail.

- Diesel electric engines: Disconnect all wires to radio equipment.

- Block signals, automatic switches: Electronic controls may fail. Plan for manual operation; CB radios for communication.

- Make sure all metal covers and side panels are in place.

h. *Electronic Computers and Calculators:* Extremely sensitive, easily damaged.

- Hand-held or desk calculators: Disconnect all wires, place in metal container.

- Large computers: Disconnect from power, telephone and control wiring. Cover any parts possible with metal screen.

i. *Military Allied Radio System (MARS) Equipment:* Semi-conductors and integrated circuits may fail.

- Radio transmitter: Disconnect all wires, place in metal container.

- Antenna Tuner: Disconnect from antenna and ground.

- Portable Power Generator: Be sure one is available. Disconnect all wires. Place generator in metal box or remove solid state controls and place in metal box.

- Battery power backup: Disconnect trickle charge and check batteries.

j. *Filling Stations:* May lose gasoline pumps if commercial power fails.

- Gasoline Pumps: Disconnect from commercial power.

- Back-up system: Keep protected emergency power generator or manual pump.

k. *Public Media:* Electronic components, computer controls may be damaged.

- Radio and TV stations: All likely to be damaged unless protected. Many will be repairable by maintenance engineers with spare parts that should be purchased and stored for that purpose. Emergency power supplies need protection of automatic transfer switch and start-up controls. Spare component stock needs augmentation.

- Newspapers: High-speed computer-controlled presses may be damaged. Develop manual back-up procedures, where possible. Need EMP-protected stand-by power generation system.

l. *Utilities:* Control and switching systems may be damaged.

- Power grid: The national power grid may have multiple failures. Small power substations will be repaired over a period of a few weeks. Lack of communication and controls will prevent tying power substations together.

- Telephone system: Automatic switching centers may be damaged. Most hand sets will survive. Isolated exchanges should be repaired enough for manual switching, over a period of a few weeks.

- Water, gas: No direct damage but loss of power and computerized controls will limit service to some segments that are not under manual operation.

Actions to Protect Equipment from EMP

1. Develop Plan of Action for EMP Protection

Local EMP Protection Coordinator (appointed by head of local government under Section 1, step 1, of this guide) develops a plan of action to improve EMP protection during the IR period. The plan provides for wide-spread dissemination of this Section to all concerned, as well as briefings on IR actions for EMP protection. Individuals and organizations to be given EMP information and briefings include *all* elements of local government (at a minimum—department heads, senior officials, and communications personnel). Local industries, radio and television stations, newspapers, utilities, construction contractors, aircraft operators (e.g., Civil Air Patrol [CAP]), filling station operators, and other organizations with equipment susceptible to EMP damage should also receive this information.

Secure additional staff to assist EMP Protection Coordinator in contacting local government and organizations, and informing them of EMP hazards and protective actions.

Make additional copies of this Section sufficient for all organizations and individuals concerned, both local government and non-government organizations.

Identify sources of materials required for expedient EMP protection, i.e., aluminum foil, metal screen, metal containers (galvanized steel garbage cans are a potential resource where other metal containers are not available).

Identify portable emergency power generators which could be used postattack for critical needs (e.g., power to pump gasoline from storage tanks).

2. Brief Key Government Officials and Staffs on EMP Protection

Local EMP Protection Coordinator briefs department heads, other senior officials, and key staff (in particular, communications personnel) on the EMP protection plan of action, and provides copies of this Section. (See Section 1 of this guide, steps 2 and 3.)

Request department heads to appoint departmental EMP Protection Coordinators (e.g., departmental communications officer or similar person) and have coordinators study this Section and prepare to develop departmental EMP protection plans, procedures, and capabilities.

3. Brief Key Representatives of Business and Industry on EMP Protection

Local EMP Protection Coordinator requests executives and key officials of local businesses and industries to attend briefing on EMP hazards and protective measures. (See Section 21 of this guide, steps 1 and 2.) Distribute copies of this Section. Organizations involved should include all those with equipment susceptible to EMP damage (e.g., radio and TV stations, newspapers, private utilities, construction contractors, filling station operators, aircraft operators such as the CAP, and taxi cab companies and other concerns with radio base stations used to contact field units).

Local government coordinator urges executives and senior managers to appoint company EMP Protection Coordinators, and have coordinators study this Section and prepare to develop company EMP protection plans, procedures, and capabilities.

4. Commence Development of EMP Protection Plans and Capabilities

Departmental EMP Protection Coordinators start developing EMP protection plans, procedures, and capabilities. Local EMP Protection Coordinator (or head of local government) urges local business and industry executives to direct company EMP Protection Coordinators to do the same.

Government and non-government EMP Protection Coordinators should take actions to develop protection plans and procedures generally as follows:

- Identify critical equipment of their department or company which is susceptible to EMP damage (e.g., communications equipment such as radio base stations, commercial radio and TV transmitting equipment, computers, emergency power equipment, electronic control equipment). Equipment of the local government Emergency Operating Center would be especially critical for postattack operations.

- Procure additional fuel for emergency power equipment and store in containers in convenient locations for refueling.

- As feasible, procure and position heavy aluminum foil, metal screen, and metal containers for protection of sensitive items prior to attack (e.g., radios, computers, solid-state electronic controls for emergency generators and other equipment). Galvanized steel garbage cans with tightly fitting covers have potential to protect sensitive items from EMP.

- As feasible, procure spare parts (e.g., electronic ignition parts for vehicles, electronic control devices, etc.). Position available spares near the most critical equipment (protected by wrapping in aluminum foil or metal screen or by placing in a metal container).

- Check that batteries used for radios and communications equipment are fully charged. Keep batteries on trickle chargers where possible.

- Check and, as necessary, improve ground connections. Assure that all ground connections are well made mechanically and electrically. Assure there are good *short* grounds tying all communications equipment together. All external communications antennas should be effectively grounded, also lead-in wires for TV antennas and cables.

- Check emergency power generating equipment. Assure all equipment is in proper running order and remote start works. Run generators under load at least 20 minutes daily. Check all fluid levels. Assure that all connections are corrosion-free; if not, clean battery terminals, power connections, and—most important—ground connections. Check wet cell battery levels. Keep all metal panels and doors to operating panels closed.

- Develop *detailed procedures* for protection of EMP-susceptible equipment and assure that all operators and other concerned personnel are fully familiar with procedures and prepared to implement them. These should address areas and actions including:

  — Readiness to disconnect all electrical and electronic equipment from power and antenna sources very quickly—when directed to do so, or *immediately* upon receipt of attack warning if not previously directed

  — Readiness to shift to emergency power when directed to do so, or *immediately* upon receipt of attack warning if not previously directed

  — Readiness to disconnect commercial electrical service at the service pole and ground the customer service end, or remove the electrical meter and ground the customer terminals (coordinating as necessary with local electric utility on such actions)

  — Readiness to turn off main breakers and circuit breakers

  — Readiness to protect portable emergency power generators (or at a minimum, solid state controls)

  — Readiness to protect sensitive components and equipment by wrapping in heavy aluminum foil or metal screen, or by placing items in a metal container (including as necessary galvanized garbage cans with tightly fitting lid)

  — Readiness to ground (or roll up) any loose conductors over 30 inches long

  — Readiness to unplug telephones if possible, leaving only one instrument connected for emergency use, with additional telephones stored nearby for postattack use

  — Readiness to use *only one radio base station at a time* after attack warning, and then only *if critically essential* and *for short and infrequent periods,* keeping all other systems disconnected

  — Readiness to use mobile radio equipment as an alternative base station

  — Readiness to improve ground connectivity by soaking the earth around each

ground stake with a mixture of salt and water

5. Implement EMP Protection Procedures

Implement EMP protection actions for local government previously planned in 4 above. This would ordinarily be done only at a very high level of readiness—*but **MUST** be done automatically and immediately if attack warning is received.*

Local EMP Protection Coordinator (or head of local government) urges business and industrial organizations to implement EMP protection actions. It would be of critical importance to contact commercial radio stations and urge that backup transmitters be used, if available. Stations without EMP protection should protect themselves by going off the air and disconnecting and grounding their audio, transmitting equipment, and antenna system.

SECTION 3

ACTIONS FOR EMERGENCY PUBLIC INFORMATION

This section outlines actions which local governments can take during crisis periods to inform the public on civil defense. These may include information on steps which Federal, State, and local governments are taking to increase civil defense (CD) readiness; and actions individuals and families can take to improve their chances for survival, including where to go and what to do in case of attack.

CD emergency public information (EPI) actions during a period of crisis would probably take place under the following conditions:

1. News facilities would be operating.

2. The public would be generally aware of the developing situation, but knowledge of specific details would depend on public statements by government officials. It is also likely that the public would be receiving less reliable information concurrently in the media from *unofficial* sources.

3. Public opinion would be influenced by the general news and by official statements. As the crisis intensified, public interest in CD information in general, and specifically on personal protective measures, would rise. With increasing frequency, State and local governments, as well as news media, would be asked questions about what was being done to deal with the situation, and what individuals should do. The questions would have to be answered as fully and quickly as possible mainly through news media supplemented by direct answers to telephone calls, and through distribution of personal protection publications.

The Increased Readiness (IR) actions described in this section would ordinarily be the responsibility of the local EPI officer, acting under directions from the head of government and working closely with the CD director.

IT IS RECOMMENDED THAT NO AREA BE EVACUATED WITHOUT FIRST CONSULTING WITH STATE OR FEDERAL AUTHORITIES.

Actions for Emergency Public Information

1. Review and Update Plans, and Check Availability of EPI Materials

Review procedures by which decisions and guidance can be obtained quickly from the head of government on public information matters.

Review EPI plans and staff assignments.

Determine availability of EPI materials; reorder if necessary; and review plans for distribution in public places (post offices, banks, fire stations, etc.) or by organizations (industries, etc.). EPI materials may include booklet H-20, Planning for Survival, and related mass media materials on

attack effects and means of protection (standby newspaper columns and TV videotape for crisis dissemination). Some training materials may also be reproduced as EPI in local newspapers which would be of critical importance if mass media EPI materials were not available for crisis dissemination. Materials could include the student text for home study course HS-4, Preparedness Planning for a Nuclear Crisis, March 1987; also booklet FEMA-59, Shelter Management Handbook, May 1984.

Determine availability of EPI materials based on local in-place protection planning ("where to go and what to do" maps and instructions from in-place planning). If an in-place protection plan has been completed, review plans and materials for redisseminating such information to the public in a crisis period. If a plan has *not* been completed, begin preparation of approximate information on "where to go/what to do" in case of nuclear attack. (For example, list of public shelters available and general areas served by them; advice for persons in areas not served by public shelter on best-available shelter such as home basements *and* on *how to improvise additional fallout protection in homes with or without basements;* advice on supplies to take to public or home shelter areas; etc.). Designs for expedient shelters are provided at the end of Section 6 of this guide. Field tests show that average American families can construct such expedient shelters in about 12 to 18 hours of hard work.

Review and update as necessary Emergency Broadcast System (EBS) program materials prepared in advance for emergency broadcast use.

2. Prepare for Increased CD Public Information Activity (Brief Key Personnel, etc.)

Should the situation warrant, brief head of government on actions proposed to increase public information acivity, and secure approval of proposed actions.

Designate local government person(s) as source for news releases and media briefings or inquiries. Responsibility to speak for local government on CD matters should be limited. In most cases, it should be assigned only to the Mayor, or City or County Manager, the CD director or deputy, and the CD-EPI officer. The designated person must be aware of all actions planned by local government or underway, and should therefore attend or be represented at all meetings where emergency matters are discussed.

Brief CD and other government department personnel on procedures for answering inquiries or issuing public statements and news releases.

If necessary, arrange for additional staff to answer public inquiries. (If the crisis deepens, a point may be reached at which no further attempt should be made to answer telephone calls from the public. At that time, *all* emergency information should be disseminated through local newspapers and broadcast stations. Until the EBS has been activated, every local radio station should be asked to broadcast emergency information to the public. A useful format could be for a CD representative to answer public inquiries on call-in programs on radio or TV, thus answering thousands of similar questions simultaneously.)

If necessary, secure services of qualified Fallout Shelter Analyst (i.e., an architect or engineer trained in FEMA-sponsored courses) to provide technical advice and guidance to the public through local news media and otherwise on means of improvising fallout protection at home.

3. Meet With Management and Staff of Local News Media to Review EPI Plans and Procedures

Local EMP Protection Coordinator briefs news media executives on actions to *protect equipment against electromagnetic pulse, or EMP* (provide copies of this guide).

Identify for news media official local government spokesperson on CD matters.

Request assistance and cooperation in preparing and releasing selected CD information materials, should the need arise, including plans for increased allocation of time and space for CD materials.

Review and update radio program materials prepared in advance for emergency broadcast. (These could also be used by local EBS stations after activation of the system.) Also update TV and newspaper materials that apply specifically to the locality.

These media materials should stress the points outlined below. Not all of these points have been stressed in past or current EPI or shelter management materials, but the actions outlined have the

potential to save *many millions of lives,* if taken in communities throughout the country:

a. *Home Shelter*—People who plan to seek protection *in their own homes* should take the following actions which, should the crisis intensify, would substantially increase their chances for survival:

- *Improve fallout protection* of the home, if it has a basement. If there is no basement, consider construction of an *expedient shelter.* (Actions to improve fallout protection of homes both with and without basements are illustrated at the end of Section 6 of this guide. Note that an expedient shelter can provide some *blast* as well as good fallout protection.)

- Gather *supplies* that would be needed for up to two weeks' survival if sheltered in the home (food, water, medicines, bedding, clothes, sanitation container, battery-powered radio, etc.).

- If in or near a *possible "risk area,"* take additional actions to *prevent fires* caused by nuclear weapon explosions:

  — Cover windows with aluminum foil, mud, whitewash, or some other opaque substance (if available) and close window blinds, drapes, or shades. This will help to prevent ignition of interior furnishings by the heat flash of the weapon.

  — Fill tubs or other containers with water, for use as auxiliary water supply and self-help firefighting.

- If Attack Warning is received, people in *risk areas* who take shelter *in their homes:*

  — Take shelter sitting or lying down in the *CORNER of the basement that is farthest belowground.* This provides the best *fallout* protection, and also the best protection against *blast.* (Do *not* stay in the middle of the basement.)

  — If there is no basement, take shelter lying down in the *middle of the house,* surrounded on all sides and overhead by furniture (and boxes or dresser drawers filled with earth), to provide some protection against low-level blast and fallout radiation. Line the protected area with mattresses and blankets.

- If a nuclear weapon explodes and affects the house:

  — *Immediately* go through the house and check for small fires (or ignitions) caused by the explosion (burning drapes, smouldering upholstery, etc.). Stamp out burning drapes, throw smouldering furniture out the windows, etc. People would have 10 or 20 minutes in which to *extinguish ignitions*—before these could grow into a fire that might destroy the house. Fallout (from the weapon that caused the ignitions) would not arrive until about 15-30 minutes after the explosion.

  — After checking for ignitions and extinguishing any found, *return to the best fallout-protected part of the house.* Listen for information on the radio concerning the degree of fallout hazard in the area. If the fallout level is high, people may have to stay in sheltered areas for one or up to two weeks. Also, instructions may be given over the radio on where to go after leaving shelter. In areas that received heavy fallout, it may be necessary for people to move 20 to 40 miles away, *after* leaving shelter, to an area that had much less fallout.

  — If the house received severe damage, it may have partly collapsed into the middle of the basement, or even blown away—yet most people in basements might have survived. Survivors in basements would need to *improve fallout protection*—by adding as

much overhead protection as possible, in the corner of the basement, using planks, bricks, and other material from the partly-destroyed house.

- If Attack Warning is received, people in *low-risk areas* who take shelter *in their homes* should take the same precautions against fallout as risk-area people. That is:

  — They should take shelter in the *corner of the basement farthest belowground.* Or if there is no basement, they should develop a shelter area in the middle of the house.

  — They should *stay in the protected part of the house* until advised by radio that they can leave shelter. (In some areas of heavy fallout, people would have to move elsewhere after leaving shelter.)

  — They would not have to extinguish ignitions or fires, or take other actions that would be needed in blast-damage areas.

b. *Public Shelter*—People who plan to seek protection *in larger buildings (that is, in public shelters)* should take the following actions which, if the crisis intensifies, would substantially increase their chances for survival:

- Gather *supplies* needed for up to two-weeks' survival in the public shelter (food, water, medicines, bedding, clothes, battery-powered radio, etc.).

- Recognize that while some public shelters would have a Shelter Manager present, others would not. If there is no Shelter Manager, survival of people in the shelter could depend on someone *taking charge and acting as Shelter Manager*—including taking the immediate actions outlined below.

- In *risk areas,* it would be critically important for acting Shelter Managers to take the following actions as soon as possible after Attack Warning and arrival of people in the shelter:

  — For *fire prevention,* people should be sent *immediately* to each floor of the building to *close ALL window blinds or curtains.*

  — Put all shelter occupants in the best *blast protection* posture immediately: Sitting back-to-back about two feet from outer walls of basement, or near columns—*not* beneath unsupported parts of basement ceilings. Where it is necessary to occupy upper floors, shelterees should lie down in the central part of the building, out of line of flying glass and debris, and hold onto each other.

  — If the building is affected by a nuclear explosion, *immediately* send people to each floor of the building to *check for ignitions* caused by the explosion (burning drapes, smouldering upholstery, etc.). Stamp out burning drapes, throw smouldering furniture out the window, etc. People would have 10 to 20 minutes in which to *extinguish ignitions*—before these could grow into a fire that might destroy the building. Fallout (from the weapon that caused the ignitions) would not arrive until about15-30 minutes after the explosion.

  — After checking for ignitions and extinguishing any found, *return to the best fallout-protected part of the building.*

- In *both high-risk and low-risk areas,* it would be urgent for acting Shelter Managers to take the following actions, which have great potential for saving lives and reducing shelterees' total exposure to radiation.

  — Place shelter occupants in *maximum fallout-protection posture* promptly on arrival: In high-risk areas, this will result to a large

degree from placing shelterees in the blast-protection posture outlined above. In low-risk areas, acting Shelter Managers should place as many people as possible in basements; where it is necessary to occupy upper floors, shelterees should be placed in central parts of buildings, avoiding areas with windows.

— If an attack occurs and fallout is deposited in the locality, acting Shelter Managers should take action to *identify locations within shelters providing the best fallout protection, by use of available radiological monitoring instruments.* The acting Shelter Manager should look for a set of civil defense radiological monitoring instruments. If a set is located, it should include instructions (printed on a yellow plastic sheet, "How to Use Your Radiological Instruments to Find the Best Shelter and to Minimize Your Exposure to Radiation").

— Acting Shelter Managers should assure maximum use of best-protected space. This may involve *crowding shelterees in best-protected areas.* Depending upon the weather, this may result in high heat and humidity developing, which can in turn result in dangerous heat exhaustion. If heat and humidity problems develop, acting Shelter Managers must move some shelterees to less well protected parts of the shelter, if possible rotating shelter occupants to and from such areas.

— Acting Shelter Managers should assure that some of the shelter occupants listen for information on the radio to monitor the fallout hazard in the area. If the fallout level is high, people may have to stay in shelter for one (or up to two) weeks. Also, instructions may be given over the radio on where to go after leaving shelter—possibly to an area 20 to 40 miles away, that received less fallout. The acting Shelter Manager should organize this movement.

c. *Action When No Information is Received on the Fallout Hazard*—EPI disseminated in time of crisis via the news media should repeatedly stress the material below. It will provide a basis to help keep citizens' radiation exposure to a *minimum* in situations where people in home or public shelters do not receive any information on the fallout radiation hazard.

- When you take shelter in your home or public shelter, if you do not receive broadcasts of information on the fallout situation, you will not know if there is a *substantial* fallout hazard in your area, *little,* or *none.* However, you can still take actions that will help keep your radiation exposure to a minimum, even if there is considerable fallout in your area.

- First, stay in the shelter area for four or five days. By that time, if fallout had been deposited in your area, its intensity will have dropped to under one percent of its level soon after the weapon exploded—that is, it would be much less dangerous outdoors than it was in the first few days after the attack.

- Then see if the telephone is working. Try to call city or county officials to get information on the fallout situation. [*Provide telephone number of local Emergency Operating Center (EOC) or other appropriate number.]*

- If this approach does not work, have one person look outdoors. If a layer of dust can be seen on trees or the ground, or sand-like particles on cars or sidewalks, that is evidence of considerable fallout and *there is probably still a moderate to substantial radiation hazard.* The person who looked outdoors should return to the shelter area and everyone should remain in shelter for several more days while radiation levels continue to

decrease. After that time, send someone outside to seek information as described below. (If there appears to be quite a thick layer of particles outdoors, there may be a very substantial hazard, and all should stay in shelter as long as they can.

- If no fallout is visible, there is probably only a low radiation hazard in the area—quite possibly none at all. In that case, the person selected should go out to seek information. First see if there are people in nearby shelter areas, in home basements, or in larger buildings; possibly they have been able to hear broadcasts with information on the fallout situation and what to do—for example, how much longer to stay in shelter areas....

- If there is no one nearby with information, then go (by car if possible) to the city hall or county court house. Look for an "emergency operating center" in a basement room. Local officials should have information on the fallout situation and should be able to give advice on what to do. *[Change the foregoing as appropriate to apply to the local situation. For example: "...then go (by car if possible) to the Brown County Emergency Operating Center. This is in Room B103 in the basement of the Brown County Courthouse, at 6th and Elm Streets in Brownville. Brown County officials there should have information on..."]* This advice might be to return to shelter for several more days, or it might be that it is now all right to leave shelters, because there was little fallout in the area.

- Whoever goes outside to get information on the fallout situation should assume until told otherwise that there *may* be some fallout radiation. This means that he should move rapidly and be outdoors for *as short a time as possible.* But even it if takes an hour or two to contact local officials, radiation exposure will probably be limited.

- Finally, anyone who goes outdoors may have some fallout particles on his shoes or clothing. These should be brushed off before entering the shelter area again.

d. *Citizens' Electromagnetic Pulse (EMP) Protective Actions*—EPI disseminated via the news media should also stress repeatedly the material below. It will help citizens to protect their radios and other electronic equipment from EMP damage.

   - In addition to blast, heat and fallout, a nuclear explosion can create an effect called electromagnetic pulse, or EMP.

   - A nuclear weapon exploding just above the earth's atmosphere could damage electrical and electronic equipment for thousands of miles (EMP has no direct effect on living things).

   - EMP is electrical in nature and is roughly similar to the effects of a nearby lightning strike on electrical or electronic equipment. However, EMP is stronger, faster, and briefer than lightning.

   - EMP charges are collected by typical conductors of electricity, like cables, antennas, power lines, or buried pipes, etc. Basically, anything electronic that is connected to its power source (except batteries) or to an antenna (except one 30 inches or less) at the time of a high altitude nuclear detonation could be affected. The damage could range from minor interruption of function to actual burnout of components.

   - Battery-operated portable radios are *not* affected by EMP, nor are car radios if the antenna is down. But some cars with electronic ignitions might be disabled by EMP.

   - You can protect electrical and electronic equipment in your home from EMP by the following actions:

     — Disconnect all electrical and electronic equipment by unplugging it. Then roll up the power cord.

— Turn off circuit breakers (or unscrew fuses in the fuse box).

— Equipment such as televisions, stereos, computers and non-battery operated radios is especially sensitive to EMP damage. Disconnect them from power lines and also from antennas and telephone lines. Keep them at least 6 feet away from any long piece of metal, such as wires, pipes or metal ducts. You can provide more protection by completely wrapping equipment in aluminum foil or metal window screen or putting it in a metal container such as a metal cake box or storage can. A galvanized steel garbage can with a tightly fitting lid also provides EMP protection..

- You should complete your EMP protection actions *if an attack appears imminent, at the LATEST when you receive attack warning.* Then use a battery-operated portable radio to receive broadcast emergency information.

Prepare or update tapes of local warning messages, including instructions on movement to shelter.

If necessary, request that news media provide professional information support by assigning personnel (e.g., newspaper editorial staff, radio or TV news editors, etc.) to assist in EPI operations.

4. Commence Dissemination of General Emergency Public Information

Commence activities representing a moderate step-up in local CD public information efforts; for example, increase distribution of CD literature, by placing it in public places and through local organizations; make low-keyed news release on partial activation of local EOC (see example at the end of this section); make speakers available to local organizations to explain local shelter and other emergency plans and to recruit persons for accelerated CD training. (See suggested news release on accelerated training at the end of Section 5 of this guide.) Emphasize citizen actions for *EMP protection.*

5. Commence Dissemination of In-Place Protection Information to the Public

If a plan for in-place protection has been completed, start distributing EPI material to the public on "where to go, what to do." Distribution may be by newspaper, by door-to-door delivery, or other means.

If a plan has *not* been completed, commence public distribution of best-available shelter information on "where to go, what to do" prepared under 1 above (lists of public shelters, advice on improvising additional protection in the home, etc.).

This kind of information would ordinarily be published only at a relatively *advanced* state of readiness.

6. Local Authorities Urge the Public to Make Final Crisis Preparedness Short of Taking Shelter

Local authorities urge citizens to make *without delay* the final preparations outlined in step 3 above, including *EMP protective actions,* development of improvised or expedient shelter as needed, etc. Such advice would ordinarily be given *only* at an extremely advanced state of readiness.

(EXAMPLE NEWS RELEASE)

PRELIMINARY STEPS TAKEN TO INCREASE CD READINESS

MAYOR _____ OF _____ ANNOUNCED TODAY

THAT SOME ROUTINE STEPS ARE BEING TAKEN TO INCREASE THE CIVIL DEFENSE READINESS OF THE CITY. THESE INCLUDE TEMPORARY ASSIGNMENT OF A SMALL CREW AT

_____ TO INSPECT AND TEST COMMUNICATIONS
(Emergency Operating Center)

EQUIPMENT, AND TO PREPARE FOR ACTIVATION OF THE CENTER IF IT SHOULD BECOME NECESSARY.

THE MAYOR EMPHASIZED THAT THESE AND OTHER MEASURES BEING TAKEN ARE PRECAUTIONARY.

HE SAID THAT "WE ARE PUTTING THEM INTO EFFECT AS A MATTER OF COMMON SENSE. WE BELIEVE IT IS IN THE PUBLIC INTEREST TO BE PREPARED. WE ALL CONTINUE TO KEEP THE PUBLIC INFORMED."

INFORMATION ON THE THINGS INDIVIDUALS CAN DO TO PROTECT THEMSELVES IN EMERGENCY IS AVAILABLE AT THE LOCAL CIVIL DEFENSE OFFICE AT

_____ AND AT
(address)

_____ .
(other locations)

SECTION 4

ACTIONS TO OBTAIN INFORMATION ON SIGNIFICANT PUBLIC ACTIONS

This section outlines actions to obtain information on public response to the crisis situation or to civil defense Increased Readiness (IR) actions taken.

Government officials at all levels—city, county, State, and Federal—would urgently need information on public response, as a basis for providing information or advice to citizens; for example, to request that they refrain from above-normal purchases of food.

Local governments should plan to obtain information daily on indicators of public response to the crisis. For example, a daily call to a local supermarket or to the headquarters of a major food retailer should provide information on whether food sales were above the normal level for the time of year, and if so, by what percent. Similarly, a daily call to a gasoline distributor should reveal if sales are above normal.

It would also be important to estimate the *number of spontaneous or other evacuees* from risk areas in a developing crisis. Spontaneous evacuation is often hard to detect, so it will be necessary to make special arrangements to measure it.

One method is based on the use of electric power, in which officials of utilities estimate how many people have left cities based on decreases in normal power usage in residential areas. Another method makes use of the *highway traffic counters* that have been permanently installed under many Interstate highways. State and local highway or transportation departments also conduct other traffic counts on a routine basis.

Accordingly, local (and State) civil defense agencies should contact highway authorities and (1) agree on the routes that should be monitored to detect greater-than-normal traffic (for example, the major routes leading out of the risk area); and (2) establish methods for comparing traffic counts during the crisis period with those for comparable normal periods—so that any increase due to spontaneous evacuation can be identified—and make arrangements for the highway authorities to report at least daily on estimated evacuation.

Local-to-State reports on evacuation are described in guidance on civil defense emergency operations reporting.

The IR actions described in this section would ordinarily be the responsibility of the local civil defense director, acting under directions from the head of local government. Responsibility might be delegated, however, to the local Emergency Public Information (EPI) officer or other appropriate official.

Actions to Obtain Information on Public Response to the Crisis

1. Review or Develop Plans for Obtaining Information on Public Response

Designate key persons who can supply information (such as representatives of a local food chain, gasoline distributor, electric power utility). Ask them to assemble information daily (preferably by mid-afternoon) and to start reporting it when requested by local government.

2. Commence Daily Inquiries to Determine Public Response

Contact persons designated as sources of information, to determine estimated level of retail food and gasoline sales above normal for the time of year and day of week.

Localities participating in IR reporting make *daily reports to the State* on IR actions, including public response to the crisis. Risk area localities give estimates on the number of people who have evacuated spontaneously or by direction, and host area jurisdictions estimate the influx of evacuees.

SECTION 5

ACTIONS TO ACCELERATE CIVIL DEFENSE TRAINING

General

This section outlines crisis actions to increase the number of individuals with civil defense (CD) training—particularly personnel such as shelter managers, radiological monitors, auxiliary policemen, auxiliary firemen, and others who may serve in an auxiliary capacity to local governments. Citizen training may also be given.

These actions are intended to increase readiness from an initial review of the accelerated training plan and alerting of instructors, to the announcement and start of training, through to the assignment of trained personnel to duty posts.

The Increased Readiness (IR) actions described in this section would ordinarily be the responsibility of the CD director, acting under directions from the head of local government. Many of these responsibilities might be delegated to the local Training Officer (TO). Police for fire departments would be responsible to recruit and train any auxiliary personnel needed by them.

Materials for Accelerated Training

Training materials include the following:

Radiological Defense (RADEF)—There are currently a number of training options available for crisis training of Radiological Monitors (RMs):

(1) A 12-hour course is available for crisis training of RMs. Use Federal Emergency Management Agency (FEMA) Instructor Guide, IG-81, Fundamentals Course for Radiological Monitors (September 1984). A radiation source set and a licensed instructor are required to conduct this course.

(2) If a source set and instructor are not available, a series of five television tapes can be used for crisis training of RMs. The five tapes include two which deal with the use and operation of radiological instruments in a shelter environment, while the others deal with effects of radiation and protective actions. Total viewing time is about 2 hours. It would be desirable for prospective RMs to complete two home study courses, if possible, to provide background for viewing the television tapes: HS-3, Radiological Emergency Management, and HS-4, Preparedness Planning for a Nuclear Crisis.

(3) If the tapes, equipment, and documents noted above are not available, then use can be made of the instructions which accompany each RADEF shelter instrument set (MP-72, How to Use Your Radiological Instruments). All or portions of the above materials can be used by knowledgeable people and adapted for the training of monitors for shelters, reporting stations, and self-protection in accordance with the time and resources available for conducting the training.

Shelter Management—Material for IR training for Shelter Managers is included in FEMA-59, Shelter Management Handbook (May 1984). If possible, get copies of FEMA SM-11 (6/81):
How to Manage a Congregate Care Facility or Fallout Shelter Student Manual. Also useful are Civil Preparedness Guide, CPG 2- 8, Sheltering and Care Operations (April 1988); CPG 2-20, Life Support Operations in Shelters (January 1988); and CPG 2-21, Habitability and Human Problems in Shelters (May 1988).

Note that current Shelter Management materials contain some guidance on fire prevention and control actions, and on placing shelter occupants in maximum protection postures against fallout and (in risk areas) blast. For additional guidance in these areas see Section 3 of this guide, step 3, also Section 17, step 3. These actions are of the utmost importance, as they have potential to save many millions of lives.

For accelerated training, the shelter exercises would be omitted. Also, time allocated for the individual lessons may, if necessary, be reduced.

Law Enforcement—To enable police auxiliary personnel to be immediately useful in limited roles in support of regular law enforcement officers, accelerated training may be given as outlined in FEMA Instructor's Guide, IG-2, Law and Order Training for Civil Defense Emergency, Part A (May 1983). (The related Student Manual, SM-2, with the same title, may also be useful.)

On completion of training using the Part A basic course materials, if time permits, follow-on training may extend the capabilities of the auxiliaries to make them more useful in support of regular officers. Accelerated training may be based on Instructor's Guide, IG-2.1, Law and Order Training for Civil Defense Emergency, Part B (June 1977).

Recruitment, selection, and training of auxiliaries should be done by the police or sheriff's department.

Training Support Assistants for Fire Departments—To enable fire auxiliary personnel to be immediately useful in limited roles in support of regular firefighters, accelerated training may be given as outlined in Student Manual, 9.2A, Support Assistants for Fire Emergency (SAFE), Part A (July 1971).

On completion of training using the Part A basic course materials, if time permits, follow-on training may extend the capabilities of the SAFE personnel and make them more useful in support of regular firefighters. Accelerated training may be based on Student Manual, Support Assistants for Fire Emergency, Part B *July 1971).

Recruitment, selection, and training of SAFE personnel should be done by the fire department.

Rescue—To provide limited rescue training for the general public, developing a capability to perform less complicated rescue operations in the absence of or before the arrival of trained rescue squads, accelerated training may be based on IG-8, Basic Rescue Course.

Follow-on training may be given, if time permits, based on IG-9, Light Duty Rescue Course.

CD Training for the Public

This section does not cover crisis training for the public in CD and survival subjects. However, where school teachers (or others) are qualified to teach CD classes for adults, they should be used to do so, as *local demand develops.* (See Section 20 of this guide.)

ACTIONS TO ACCELERATE CIVIL DEFENSE TRAINING

1. Review and Update Accelerated Training Plan

Review Accelerated Training Plan, with special emphasis on availability of TOs, instructors, classroom space, and training materials (See suggested local accelerated training plan at the end of this section.)

Update plan, instructor roster, and other arrangements as required; secure additional training materials if needed and available. (Note: All trained instructors should be considered potential instructors for accelerated training.)

Review public announcement and update and complete as necessary for possible use. (See sample announcement at the end of this section.) Coordinate with local Emergency Public Information (EPI) officer.

Review plans for a recruiting effort through individual services needing augmentation (e.g., RADEF service, police, etc.). Review or develop plan to contact building owners or managers to recruit personnel for training as shelter managers.

2. Alert Instructors for Accelerated Training

Contact instructors designated for accelerated

training and alert them for duty if notified, specifying place, estimated date of first classes if known, etc.

3. Announce Courses and Commence Training

Request local EPI officer to issue public announcement(s) to obtain maximum public awareness in advance of accelerated courses.

Begin intensive recruiting effort through services needing augmentation (e.g., RADEF service, shelter, police, etc.).

Notify instructors to report for duty at specified classrooms; make arrangements for them to secure training materials needed.

Make final check of classroom facilities.

Instructors register students on arrival.

Conduct training.

Register trained personnel as CD personnel for workmen's compensation purposes.

Suggested Local Accelerated Training Plan

Local CD agencies, with the guidance and assistance of the States, should take the following steps, or the equivalent, comprising an Accelerated Training Plan:

1. Appoint a paid or volunteer training officer (TO) to the CD staff, with responsibility for all training, normal or accelerated. If funds are not available for a paid TO, appoint a qualified school teacher or administrator, fire or police officer, or other person with demonstrated ability to run a large-scale training program, who has the time to prepare in peacetime to organize and supervise accelerated training in time of crisis. The TO:

2. Appoints deputies responsible for accelerated training in each functional area; e.g., shelter management, police, radiological monitoring, fire, etc.

3. Keeps an up-to-date roster of instructors able and willing to carry on accelerated training in periods of increased tension. This roster should include instructors trained by FEMA, as well as qualified police and fire services instructors. It may also include as alternates shelter managers or radiological monitors trained locally by FEMA-qualified instructors, when there are not enough certified instructors to handle the expected training load.

4. Determines, with the CD director, shortages of essential personnel. TO determines the number of classes of 20 persons each needed to meet the shortage.

5. Matches the number of classes required with the best qualified instructors available to arrive at tentative accelerated training assignments for the instructors available. If possible, plans to have *all* accelerated training completed in one 8- to 12-hour day, including evening sessions. If this is impossible, plan a 2-day completion.

6. Contacts instructors on the roster and confirms that they will make themselves available to carry on accelerated day and evening training for the number of hours necessary on request by the TO. Adjusts tentative assignments as necessary.

7. Arranges for classroom or training facilities with schools, colleges, police and fire departments, veterans' organizations, or other groups with available space. The classroom or training facilities should be available on short notice for day and evening use, including wekends in time of need.

8. With the director, procures from the Region or the State CD agency training materials necessary for 150 percent of the estimated training load. If training materials are not available from the State or FEMA Regional Office, reproduces materials which are locally available in the necessary quantities. Stockpiles materials at CD offices or at training facilities.

9. Stockpiles any forms required under local ordinances to enroll accelerated training graduates as civil defense workers, for workmen's compensation and other purposes.

10. Prepares, with CD director and EPI officer, a public announcement covering the following: Types of accelerated skills training available; place and time classes will be held for each skill; duration of class; fact that persons completing classes will be enrolled as CD workers and given assignments; and facts on enrollment or reporting procedures for each class. (See example below.)

11. Plans to integrate individuals completing courses into the CD structure; for example, to assign shelter managers to shelters, or police trainees to the police structure.

12. Tests Accelerated Training organization by exercises.

13. Checks and, if necessary, updates plans, instructor rosters, and other arrangements semi-annually.

(EXAMPLE NEWS RELEASE)

SPECIAL CIVIL DEFENSE TRAINING CLASSES

ACCELERATED CIVIL DEFENSE TRAINING CLASSES WILL BE OFFERED _____ (dates) FOR CRITICALLY NEEDED CIVIL DEFENSE SKILLS.

THE CLASSES WILL QUALIFY GRADUATES FOR DUTY AS SHELTER MANAGERS, RADIOLOGICAL INSTRUMENT OPERATORS, AND _____ (other).

_____ (city) NEEDS _____ (number) MORE SHELTER MANAGERS TO HELP STAFF _____ (number) FALLOUT SHELTERS. _____ (city) ALSO NEEDS _____ (number) RADIOLOGICAL INSTRUMENT OPERATORS AND _____ (number) _____ (other) TO FILL OUT THE EMERGENCY ORGANIZATION.

THE ACCELERATED COURSE FOR SHELTER MANAGERS REQUIRES 8 HOURS, WHILE THAT FOR RADIOLOGICAL INSTRUMENT OPERATORS TAKES 12 HOURS. (Add information on other courses available.)

COURSES ARE SCHEDULED _____ (date) AS FOLLOWS:

SHELTER MANAGERS — _____ (fill in designated times), AT _____ (fill in name of school) SCHOOL, _____ (address), ROOMS _____ (identify space).

RADIOLOGICAL INSTRUMENT OPERATORS _____ (fill in designated times), AT _____ (fill in name of facility) FIRE STATION, _____ (address), ROOMS _____ (identify space).

ALL GRADUATES OF THE SPECIAL COURSES WILL BE GIVEN ASSIGNMENTS. CITIZENS ARE URGED TO REPORT TO THE CLASSROOMS LISTED AND TO ENROLL WITH THE QUALIFIED CIVIL DEFENSE INSTRUCTORS WHO WILL BE ON DUTY THERE. CLASSES ARE LIMITED TO 20 PEOPLE, ON A FIRST-COME, FIRST-SERVED BASIS. FURTHER CLASSES MAY BE SCHEDULED IN CASE OF AN OVERFLOW. (Or other enrollment instructions.)

PERSONS COMPLETING THESE CLASSES WILL BE ENROLLED AS OFFICIAL CIVIL DEFENSE WORKERS, AND WOULD THUS HAVE WORKMEN'S COMPENSATION, COVERAGE FOR INJURY INCURRED IN LINE OF DUTY, UNDER (State law or local ordinance, as applicable).

SECTION 6

ACTIONS BY HOST AREA GOVERNMENTS TO PREPARE FOR ARRIVAL OF EVACUEES

This section outlines actions which may be taken by governments of host counties during periods of international crisis to prepare for the arrival of spontaneous (or other) evacuees.

Host area plans should include details of actions to direct traffic into and through host areas, to park cars and register evacuees assigned to the host jurisdiction (normally a county), to provide for feeding and temporary lodging of evacuees, to provide for development of fallout protection (by upgrading existing structures and/or construction of expedient shelters), and to take a number of related actions to achieve maximum survival of both evacuees and residents should crisis evacuation be followed by enemy attack.

Progress in developing plans and capabilities for the contingency of crisis evacuation will depend upon resources available. It is possible that a severe crisis could arise before detailed plans had been completed in many or most of the counties designed as host areas. Even if there were no nationally directed evacuation, there could be considerable "spontaneous evacuation" from risk areas. The number of such evacuees cannot be predicted with accuracy, but in the more densely populated parts of the country, this could conceivably lead to a doubling or even tripling of host county populations.

It is also possible that a crisis evacuation could be implemented even though detailed planning had not been completed in some counties designated as host areas. Finally, a developing peacetime hazard (hurricane, terrorist threat, etc.) could require rapid development of hosting plans in counties surrounding threatened areas.

Thus, during a crisis it would be prudent for counties without detailed crisis evacuation plans to develop ad hoc or improvised plans for hosting operations in case the need to host evacuees later confronts their jurisdiction.

During a crisis situation, State civil defense (CD) personnel would probably *not* be able to provide onsite guidance or assistance for each host county. However, State staffs should be able to advise each county of the approximate number of evacuees that could arrive, the risk areas the evacuees would likely be coming from, and the routes on which they would be likely to be moving. The State may also be able to provide copies of detailed planning guidance and possibly examples of completed host-area plans for other jurisdictions in the State.

In the case of early spontaneous evacuation, many might have their own places to go (friends, relatives, or vacation homes). These evacuees would likely not add greatly to the Increased Readiness problems the host area government would already face in terms of protecting its own residents. As the crisis worsens, however, there could be additional spontaneous evacuees—possibly in large numbers—who would need assistance.

This section is not intended as a detailed guide to host area planning. Rather, it is a checklist of only the most important aspects of ad hoc or improvised arrangements to assist large numbers of evacuees who could arrive on short notice. For even reasonably effective hosting operations, a high degree of initiative and improvisation would be called for from host area governmental and non-governmental leaders—and a high degree of cooperation from evacuees. Natural disaster experience is that most people will be highly cooperative if given timely, accurate, and authoritative information and instructions from governmental leaders.

Actions to Increase Readiness for Hosting Evacuees

1. Brief Head of Government

CD director should secure as much information as possible from the State staff concerning status of crisis evacuation planning in the State (as this affects the locality), any indications of developing spontaneous evacuation, approximate number of evacuees that could be expected in the locality, and related information. He should also, if possible, secure from the State copies of planning guidance, examples of completed host-area plans from elsewhere in the State, and other materials that would assist in rapid, ad hoc planning in the locality.

CD director briefs head of government on situation, on potential local problems should spontaneous evacuation develop (or crisis evacuation be implemented), on status of crisis evacuation planning within the State, and on initial planning (if any) affecting the jurisdiction.

CD director recommends participants for initial meeting of governmental and other leaders to consider the situation and commence development of ad hoc hosting plans. These should include people able to address problems such as traffic control, emergency public information (EPI), lodging and feeding evacuees, and development of fallout protection. (Consider county supervisors or executives, county attorney, law enforcement officials, fire chief, welfare officials, representatives of American Red Cross and voluntary welfare organizations, news media representatives, representatives of food retailers and restaurant and motel operators, representatives of churches, school officials, county engineer, representative of construction contractors, utility officials, public health officials, representative of county medical society.)

2. Brief Local Government Officials and Other Leaders, and Assign Responsibilities

Head of government and/or CD director—convene initial meeting of local leaders decided on in step 1.

Brief leaders on the crisis situation, the possibility of spontaneous or directed evacuations, problems that could then confront the jurisdiction, and need for rapid, ad hoc planning should substantial numbers of evacuees arrive and need assistance.

Outline basic emergency organization in existing local emergency operations plan, and additional operations that would be needed should the crisis intensify and evacuees arrive in the jurisdiction, such as (a) providing EPI for both evacuees and residents; (b) traffic control, parking, and maintenance of law and order; (c) providing temporary lodging for evacuees; (d) feeding evacuees; and (e) developing fallout protection.

Assign responsibilities for planning in the foregoing basic areas, and designate planning group chief where representatives from a number of different areas are involved. (Example: The feeding planning group could involve restaurant, food retailer, school, church, American Red Cross, and other representatives—one of whom should be in charge.)

Designate an overall planning director, to coordinate and direct efforts of all involved in ad hoc planning.

3. Start Development of Ad Hoc Hosting Plans

Emergency Public Information—Local news media

representatives develop procedures for providing official information and advice to evacuees and residents via the news media, should spontaneous evacuation develop (or crisis evacuation be implemented). Specific information and instructions would be based on plans made for the areas outlined below, with the aim of gaining maximum cooperation by both evacuees and residents.

With regard to fallout protection, illustrations of techniques for increasing the fallout protection of various types of buildings appear at the end of this section, followed by designs of typical expedient shelters. **Illustrations showing selected expedient shelter designs, and fallout upgrading techniques, should be included in local EPI materials.** The illustrations provided at the end of this section can be used in developing local EPI materials during a crisis, if other materials are not available.

EPI material for the host area residents should stress that while plans provide for lodging evacuees in schools, churches, and other non-residential structures, residents are requested to invite evacuees into their homes on a voluntary basis if they feel they can do so. (Both natural disaster experience and research suggest that substantial numbers of residents would voluntarily accept evacuees in their homes.)

Also EPI material may suggest that residents may wish to share their basements with evacuees, should an attack occur with the threat of a lethal fallout hazard, and if adequate public shelter for evacuees had not been produced.

Traffic Control and Law Enforcement—Most evacuees would use their own cars. In planning for traffic control and law enforcement:

- Evaluate police requirements for an increased population. Discuss and plan for coordination of police operations within the county, and for augmentation of regular officers with auxiliaries, if necessary.

- Identify off-street parking areas for possibly large numbers of evacuee vehicles.

- Plan for (a) traffic movement patterns for control of vehicles, including direction to parking areas and to reception centers (signs, intersection control, etc.); (b) close coordination with the State law enforcement agency on all movements toward the county; and (c) any by-passes to be established, to move some of the evacuees on to other host counties.

- Provide for additional security for local facilities, if necessary.

Lodging—Working with established welfare organizations, the host county government should determine facilities suitable for emergency lodging including, for example, those facilities commonly used for natural disaster refugee lodging (schools, churches, armories, motels, etc.). Planning should consider that the number of evacuees might exceed the capacities of these types of buildings (allowing about 40 square feet per evacuee). In that event, larger commercial buildings and/or barns and other non-residential rural structures might have to be used.

Plans should *not* provide for assigning any evacuees to private residences. However, if evacuees arrive in large numbers, county officials should request that residents voluntarily accept evacuees in their homes.

Feeding—The number of evacuees and capabilities of food service facilities will dictate feeding plans. Commercial and school cafeterias can handle about four times their normal capacity by increasing the work force and hours of operation. Noncommercial establishments (e.g., churches) can about double their normal levels.

American Red Cross and other private welfare organizations with experience in natural disaster welfare operations should be consulted as to the amount and types of food necessary to sustain evacuees over extended periods.

Fallout Protection—CD director reviews the in-place protection plan, and makes plans for providing additional fallout protection for evacuees. Existing facilities providing fallout protection should be used insofar as possible, with deficits to be met by developing expedient shelters, or by planning to upgrade existing buildings judged suitable. (Upgrading requires placing an additional supporting wall between existing walls or girders and then piling earth about 9 feet high along all exterior walls, plus adding 10 to 12 inches of earth overhead. See upgrading techniques illustrated at the end of this section.)

4. Refine and Extend Ad Hoc Planning

Groups involved in ad hoc planning for major areas outlined in step 3 continue to develop plans, coordinated by overall planning director.

Planning is extended to additional areas deemed necessary. These may include:

- Plan for establishing evacuee registration centers (schools are recommended)
- Surveys of existing stocks of food, fuel, and other life-support resources
- Consideration of impact of increased population on community public services (water, sanitation, fire protection, electric power, etc.), and ways to mitigate impact
- Survey of hospital and outpatient medical loads vs. potential needs, and means of providing medical care for evacuees
- Surveys of health and sanitation supplies
- Refuse disposal and sanitation operations
- Establishing retail and services organization to coordinate business and commercial activities in support of local government operations
- Enactment of any ordinances needed to provide authority for operating officials

EPI plans and standby materials for later use are expanded as required by broadened planning.

5. Develop Organizations Needed to Execute Ad Hoc Plans

As necessary, develop organizations needed to execute ad hoc plans (such as school personnel to operate evacuee registration centers).

6. Activate Ad Hoc Hosting Plans as Required

If significant evacuation develops, local officials implement ad hoc plans. This includes dissemination of information and instructions for evacuees and residents (such as instructions for evacuees on where to register, requests to residents to volunteer homes for temporary lodging of evacuees, information on expedient shelter construction).

ILLUSTRATIONS OF SHELTER UPGRADING TECHNIQUES

The following illustrations are examples of concepts and approaches for crisis actions to improve the fallout protection of various types of existing buildings. Note that the illustrations indicate that buildings need strengthening, to assure that they can support the added burden of earth placed overhead and adjacent to the exterior above-ground walls—in addition to possible low overpressures from nearby risk areas.

A qualified engineer or builder should advise local officials on how to do such strengthening, before attempting to upgrade fallout protection.

Also, a qualified Fallout Shelter Analyst, if available, should advise on which buildings offer the best potential for upgrading fallout protection.

In hot weather, *adequate ventilation is absolutely essential* to avoid heat and humidity which could cause shelter occupants to collapse or even die. See the instructions for building an expedient air ventilation pump (pages 69-71). If you cannot build the air pump, then make large, 1-man "directional fans" as shown at pages 75-77. Whatever the effort needed, good ventilation is critical.

FALLOUT PROTECTION FOR HOMES WITH BASEMENTS
(PARTIALLY BELOWGROUND)

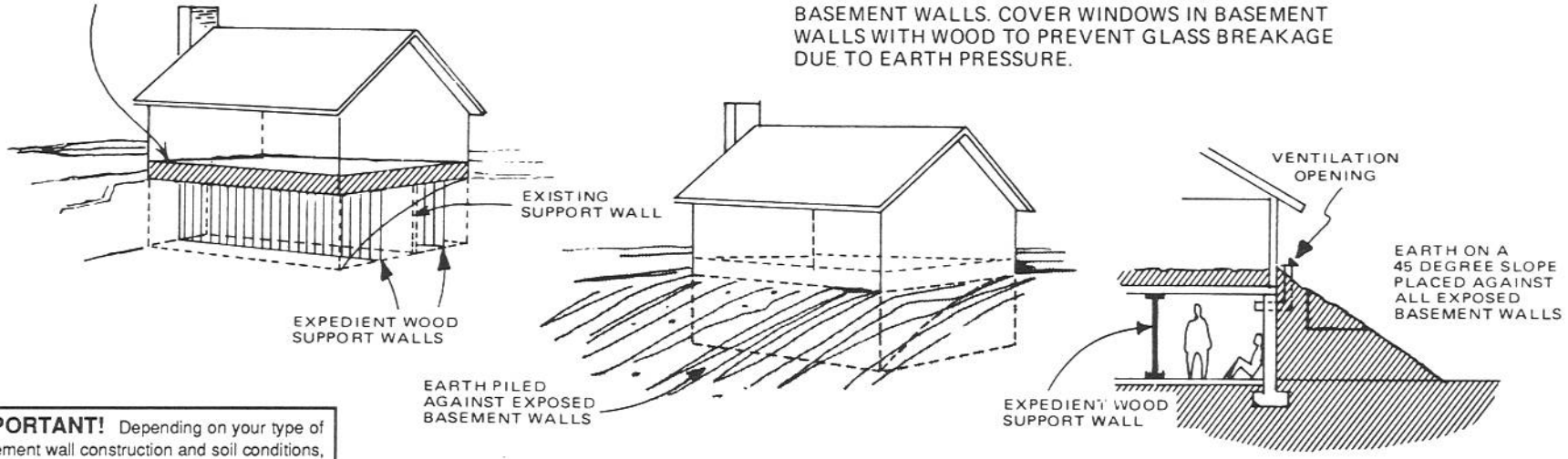
STEP ONE – EXPEDIENTLY CONSTRUCT A WOOD SUPPORT WALL AT THE MID-SPAN TO SUPPORT EARTH ON FLOOR.

HOMES WITH BASEMENTS PARTIALLY BELOWGROUND ALSO HAVE POTENTIAL FOR PROVIDING FALLOUT PROTECTION, BUT NOT AS MUCH AS THOSE WITH BASEMENTS COMPLETELY BELOWGROUND.

TO IMPROVE THE FALLOUT PROTECTION IN THE BASEMENT AREA, TWO THINGS MUST BE DONE: (1) PROVIDE AN OVERHEAD BARRIER AND, (2) INCREASE THE BARRIER (THICKNESS) OF THE EXPOSED BASEMENT WALLS. THIS CAN BE ACCOMPLISHED AS SHOWN IN SKETCHES. BOTH STEPS MUST BE TAKEN TO OBTAIN THE FALLOUT PROTECTION. DOING ONE STEP IS NOT ENOUGH.

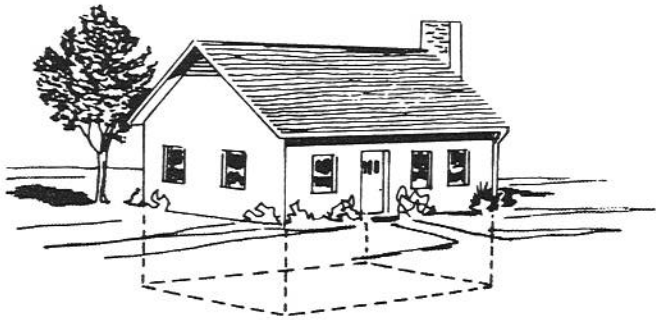
STEP TWO – PROVIDE OVERHEAD BARRIER BY PLACING 12" OF EARTH ON ROOF OR ON FLOOR OVER BASEMENT

STEP THREE – IMPROVE VERTICAL BARRIER BY PLACING EARTH AGAINST ALL EXPOSED BASEMENT WALLS. COVER WINDOWS IN BASEMENT WALLS WITH WOOD TO PREVENT GLASS BREAKAGE DUE TO EARTH PRESSURE.

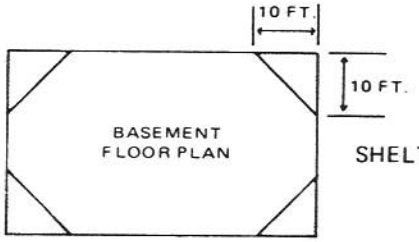


IMPORTANT! Depending on your type of basement wall construction and soil conditions, wall-shoring may be needed to prevent collapse of floor and walls.

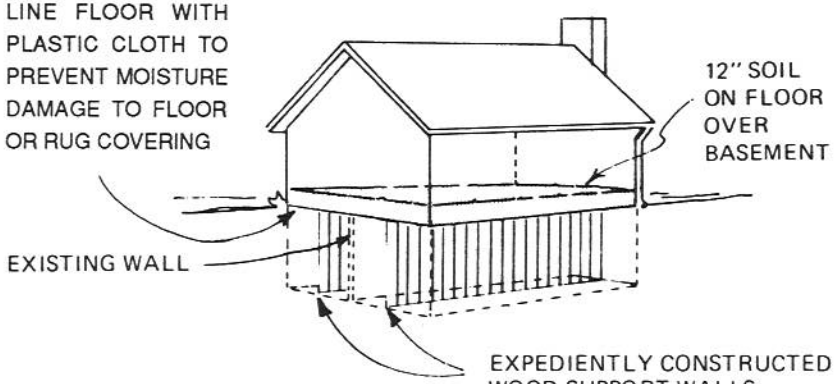
FALLOUT PROTECTION FOR HOMES WITH BASEMENTS
(FULLY BELOWGROUND)



HOMES WITH BASEMENTS (COMPLETELY BELOWGROUND) ALREADY HAVE FALLOUT PROTECTION ESPECIALLY IN THE CORNERS OF THE BASEMENT.



SHELTER AREA IN CORNERS

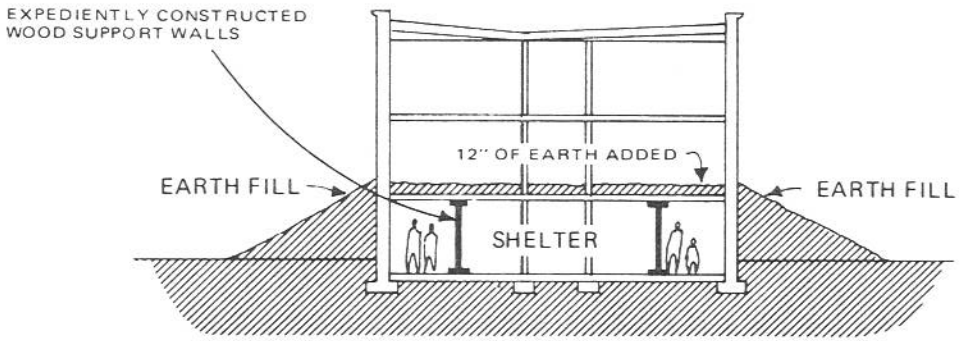


UPGRADING THE BASEMENT SHELTER PERMITS THE ENTIRE BASEMENT AREA TO BE FALLOUT PROTECTED, THUS ALLOWING THE HOMEOWNER TO SHARE THE BASEMENT WITH OTHERS.

THIS PROTECTION CAN BE ENHANCED CONSIDERABLY BY FIRST EXPEDIENTLY CONSTRUCTING WOOD SUPPORT WALLS AT THE MID-SPAN AND THEN PLACING 12 INCHES OF EARTH OVER THE ENTIRE FLOOR COVERING THE BASEMENT AREA.

FALLOUT PROTECTION IN SCHOOL BUILDINGS

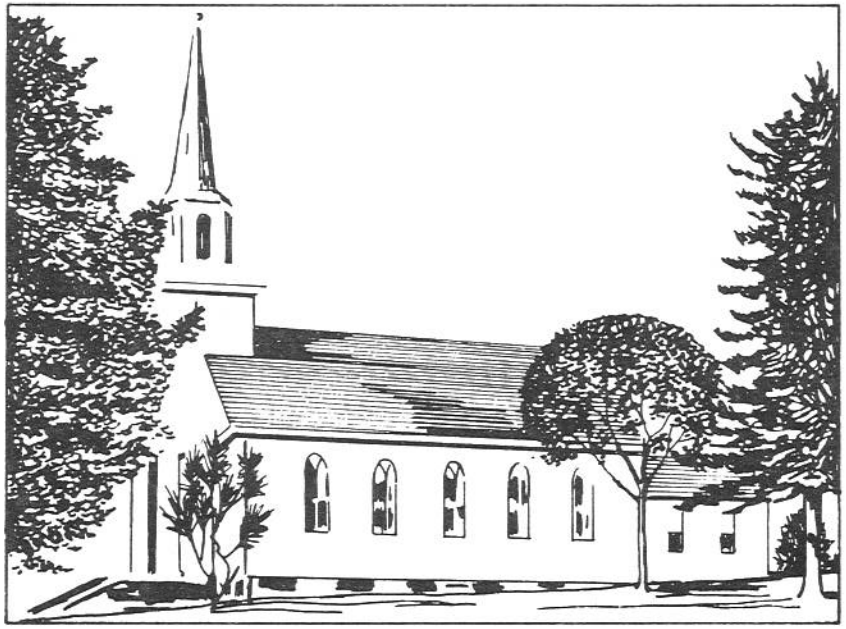
EXISTING SCHOOL BUILDINGS CAN SERVE AS CONGREGATE CARE FACILITIES FOR RISK AREA EVACUEES. BEST FALLOUT PROTECTION CAN BE FOUND IN INTERIOR CORRIDORS AND ROOMS ON THE LOWEST FLOOR, ESPECIALLY IF THE SCHOOL HAS TWO OR MORE STORIES AND THE EXTERIOR WALLS ARE OF CONCRETE OR MASONRY CONSTRUCTION. FALLOUT PROTECTION CAN BE IMPROVED BY FIRST EXPEDIENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PROVIDING ADDITIONAL VERTICAL AND HORIZONTAL BARRIERS OF EARTH AS SHOWN IN SKETCH. WINDOWS IN EXTERIOR WALLS THAT ARE TO BE COVERED WITH EARTH SHOULD BE PROTECTED WITH LUMBER OR PLYWOOD SHEETS SO THAT THEY WILL NOT BREAK UNDER THE EARTHFILL.



NOTE:
ADDITIONAL VENTILATION WILL BE REQUIRED. SEE DESIGN OF AIR VENTILATION PUMP.

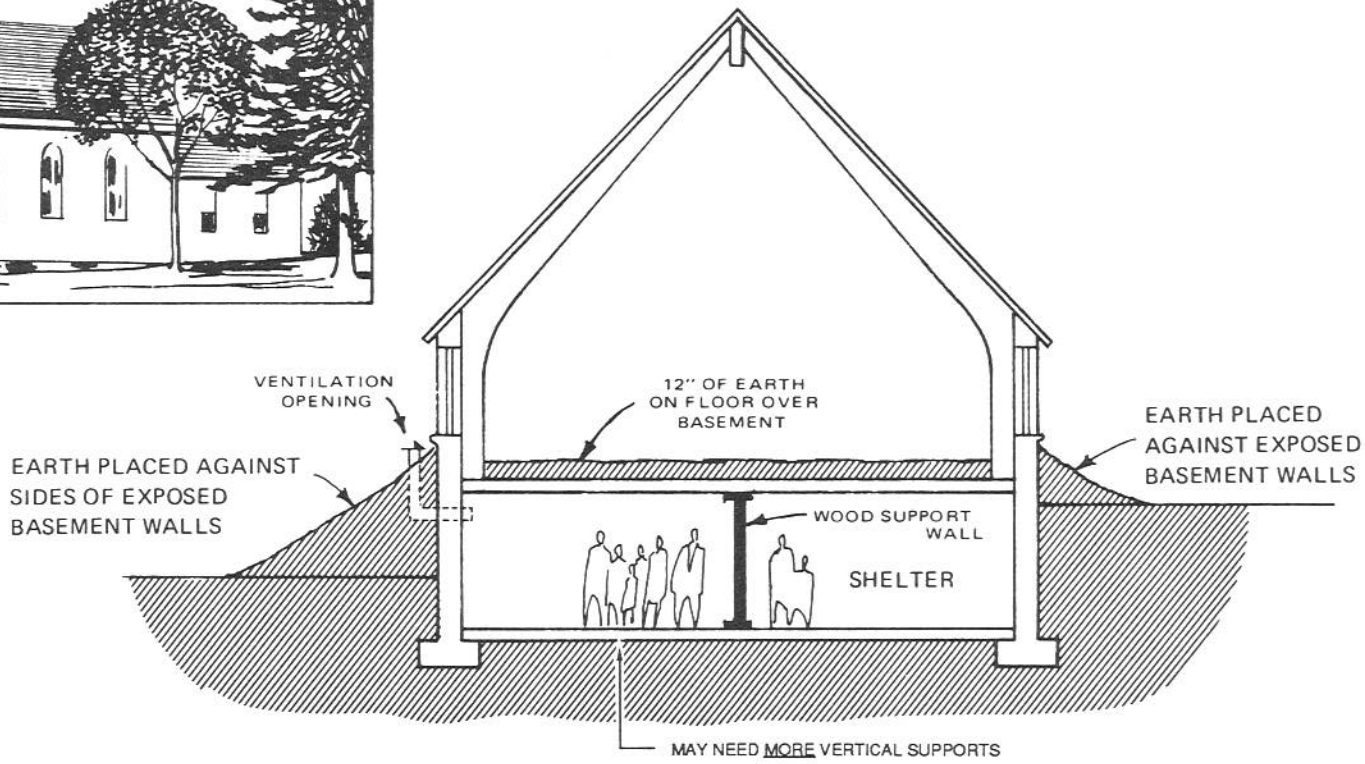
IMPORTANT! Depending on the type of above-ground outside walls, and the type and saturated condition of the earth berm, some kind of vertical wall-shoring will probably be required.

FALLOUT PROTECTION IN CHURCHES



EXISTING CHURCH BUILDINGS CAN SERVE AS CONGREGATE CARE FACILITIES FOR RISK AREA EVACUEES. BEST PROTECTION CAN BE FOUND IN THOSE BUILDINGS THAT HAVE MASONRY EXTERIOR WALLS AND BASEMENTS. SHELTER IN THE BASEMENT AREAS CAN BE IMPROVED BY FIRST EXPEDIENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PLACING 12 INCHES OF EARTH ON THE FLOOR OVER THE BASEMENT AND BY MOUNDING EARTH AGAINST THE EXPOSED BASEMENT WALLS.

NOTE:
ADDITIONAL VENTILATION WILL BE REQUIRED.
SEE DESIGN OF AIR VENTILATION PUMP



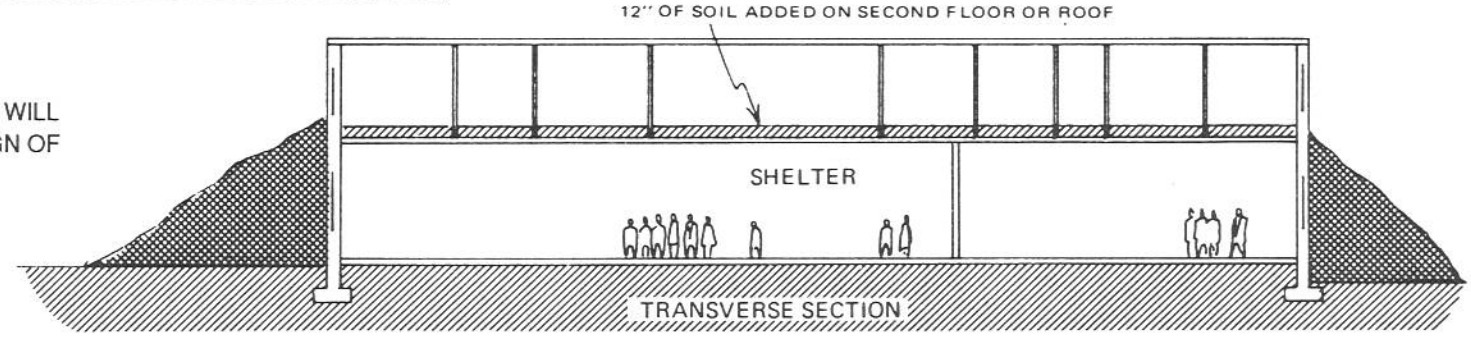
IMPORTANT! Depending on the type of above-ground outside walls, and the type and saturated condition of the earth berm, some kind of vertical wall-shoring will probably be required.

FEMA2/
shelter-3-4

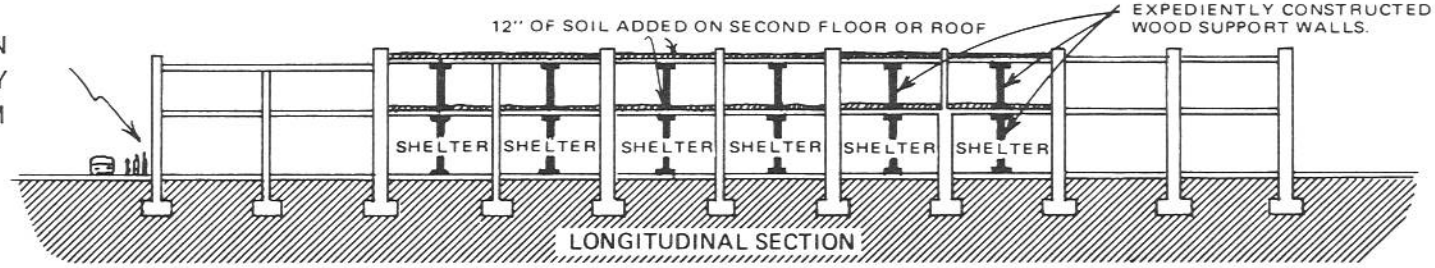
FALLOUT PROTECTION IN TYPICAL DOWNTOWN ROW-TYPE BUILDINGS

TWO-STORY BUILDINGS IN A ROW GROUPING (NO SEPARATION BETWEEN BUILDINGS) CAN HAVE THE EXISTING FALLOUT PROTECTION IMPROVED CONSIDERABLY IN THE "INTERIOR" SECTIONS BY FIRST EXPEDIENTLY CONSTRUCTING A WOOD SUPPORT WALL AT THE MID-SPAN POINT AND THEN PLACING EARTH AT THE FRONT AND REAR OF THE BUILDINGS AS WELL AS ON THE FLOOR OVER THE FIRST STORY AND/OR THE ROOF, AS SHOWN IN THE SKETCHES. THE TWO BUILDINGS AT EITHER END OF THE ROW SHOULD NOT BE USED FOR SHELTER PURPOSES SINCE THEY PROVIDE SHIELDING FOR THE "INTERIOR" SECTIONS. GLASS FRONTS SHOULD BE PROTECTED FROM BREAKAGE WITH WOOD OR PLYWOOD PANELS.

NOTE:
ADDITIONAL VENTILATION WILL BE REQUIRED. SEE DESIGN OF AIR VENTILATION PUMP



END STORES CAN BE UPGRADED BY PROVIDING BERM ON END WALLS



IMPORTANT! Depending on the type of above-ground outside walls, and the type and saturated condition of the earth berm, some kind of vertical wall-shoring will probably be required.

MINES, CAVES AND TUNNELS . . .

. . . ARE ANOTHER RESOURCE FOR PROVIDING FALLOUT SHELTER. WHILE MOST OF THIS RESOURCE IS NOT LOCATED WITHIN OR NEXT TO MAJOR METROPOLITAN AREAS, IT IS CLOSE ENOUGH TO BE REACHED BY CITY DWELLERS. MINES, CAVES AND TUNNELS EXIST AND ARE IN COMMERCIAL USE IN SUCH PLACES AS KANSAS, MISSOURI, PENNSYLVANIA, VIRGINIA, UTAH, AND MONTANA. THE MAJOR PROBLEM IN GETTING THESE FACILITIES READY FOR PEOPLE TO USE THEM AS SHELTERS IS LIGHTING AND VENTILATION. TESTS CONDUCTED IN A LIMESTONE MINE NEAR DOWNTOWN KANSAS CITY INDICATED THAT EMERGENCY GENERATORS WOULD BE REQUIRED TO PROVIDE POWER FOR LIGHTING AND OPERATING THE VENTILATION EQUIPMENT IN THE MINE. A LOCAL CONTRACTOR WAS ABLE TO INSTALL LIGHT AND POWER OUTLETS AT DESIGNATED LOCATIONS IN THE MINE, IN ACCORDANCE WITH A PREDESIGNED LAYOUT IN A SHORT PERIOD OF TIME.

LARGE FANS (5 FT. DIAMETER, 60,000 CFM) ARE NEEDED AT THE ENTRANCES TO IMPROVE VENTILATION. THOSE MINES WITH DOUBLE ENTRANCES (TWO ALONGSIDE EACH OTHER AS OPPOSED TO THOSE WITH ENTRANCES AT OPPOSITE ENDS OF THE MINE) REQUIRE CONSTRUCTION OF SPECIAL DUCTING TO PREVENT AIR FROM "SHORT CIRCUITING" BETWEEN ENTRY WAYS. A DIVIDING WALL FORMED BY COVERING WOODEN FRAMES WITH POLYETHYLENE SHEETS, IS NEEDED TO SEPARATE THE TWO ADJOINING ENTRANCES. WITH THIS DUCTING ARRANGEMENT, THE EXHAUST FANS EXPEL AIR ON ONE SIDE OF THE DIVIDER WALL WHILE FRESH AIR IS DRAWN INTO THE MINE THROUGH THE ENTRANCE ON OTHER SIDE OF THE WALL.

SMALL MINES, IF HABITABLE, OR IF THEY CAN BE MADE HABITABLE IN A CRISIS, SHOULD BE INCLUDED IN EVACUATION PLANNING IF THERE IS AN INSUFFICIENT NUMBER OF UPGRADABLE BUILDINGS TO OVERCOME THE SHELTER DEFICIT.

ANY MINE CONTAINING DANGEROUS GASES, HARMFUL BACTERIA, OR EXTENSIVE WETNESS, SHOULD NOT BE USED. ALTHOUGH CAVES AND TUNNELS CONSTITUTE ONLY A SMALL PERCENTAGE OF THE AVAILABLE UNDERGROUND SPACE, THEY TOO SHOULD BE INCLUDED IN THE PLANNING WHERE AVAILABLE AND THE SPACE IS NEEDED.

ILLUSTRATIONS OF EXPEDIENT SHELTER DESIGNS

The following designs have all been field tested. In these tests, over 40 typical American families were given only simple instructions (such as the illustrations which follow).

The tests showed that *a typical family can construct these shelters in about 12 to 18 hours of hard work.*

Note that expedient shelters provide *excellent fallout Protection Factors (PFs)* of 100 to 200 or better, if constructed as shown in the following designs, and *significant blast protection as well.* Thus, expedient shelters could provide some protection for key workers or others who were in risk areas at the time of an attack.

In hot weather, *adequate ventilation is absolutely essential.* People could collapse from heat and humidity, or even die. So in hot weather, be sure to construct an Expedient Air Ventilation Pump, or if you cannot do that, make "directional fans" as shown at the end of this section.

These are
PLANS FOR EXPEDIENT
FALLOUT SHELTERS

SAVE THESE PLANS—THEY MAY SAVE YOUR LIFE

● GENERAL INFORMATION

WITHOUT PROTECTION, UNTOLD NUMBERS OF AMERICANS WOULD DIE NEEDLESSLY IN THE EVENT OF A NUCLEAR ATTACK. THE EXPEDIENT SHELTERS ILLUSTRATED IN THE FOLLOWING PAGES PROVIDE PROTECTION TO OCCUPANTS FROM THE DEADLY RADIATION OF RADIOACTIVE FALLOUT GENERATED BY A NUCLEAR DETONATION – THEIR USE CAN SAVE THE LIVES OF MILLIONS OF AMERICANS.

EVEN THOUGH THE ILLUSTRATED SHELTERS ARE VERY AUSTERE, THERE ARE A NUMBER OF THINGS THAT CAN BE DONE TO IMPROVE THEIR HABITABILITY AFTER THEY HAVE BEEN BUILT. WITH THE USE OF A LITTLE INGENUITY AND EFFORT, THE SHELTERS CAN BE MADE MORE COMFORTABLE. SOME OF THE THINGS THAT CAN BE DONE ARE:

- CONSTRUCT SEATS, HAMMOCKS, OR BUNKS.
- COVER THE FLOOR WITH BOARDS, PINE BOUGHS OR LOGS AND DRAPE SHEETS OR MATERIAL OVER THE EARTH WALLS.
- PROVIDE SAFE, DEPENDABLE LIGHT.
- FOR HOT WEATHER, CONSTRUCT THE EXPEDIENT AIR VENTILATION PUMP. VENTILATION IS CRITICAL IN HOT WEATHER. WITHOUT ENOUGH OUTSIDE AIR, THE SHELTER CAN BECOME SO HOT AND HUMID THAT SHELTER OCCUPANTS MAY COLLAPSE OR EVEN DIE. IF YOU DON'T HAVE THE MATERIALS NEEDED TO CONSTRUCT THE EXPEDIENT AIR VENTILATION PUMP, MAKE USE OF "DIRECTIONAL FANS" AS SHOWN IN THE LAST TWO PAGES OF THIS SECTION.
- FOR COOKING, CONSTRUCT THE EXPEDIENT COOK STOVE FOR USE IN THE ENTRYWAY. IN COLD WEATHER, SEAL THE ENTRANCE AND USE THE STOVE FOR HEATING THE SHELTER AREA. BE SURE VENTILATION IS PROVIDED WHENEVER THE STOVE IS USED.
- STORE SHELTER SUPPLIES IN ENTRYWAY FOR MORE LIVING SPACE. COVER ALL OPEN CONTAINERS. RADIATION WILL NOT DAMAGE THESE SUPPLIES.

PEOPLE MUST HAVE WATER AND FOOD TO LIVE. WHEN PEOPLE ARE TO LIVE IN A SHELTER FOR A WEEK OR TWO, SUFFICIENT FOOD AND SUPPLIES MUST BE PROVIDED FOR THE OCCUPANTS. THE MINIMUM NECESSITIES ARE:

- WATER – MINIMUM REQUIREMENTS (DEPENDENT UPON TEMPERATURE – LESS IN COLD WEATHER, MORE IN WARMER) WILL BE FROM ONE QUART TO ONE GALLON PER PERSON PER DAY. STORAGE CAN BE ACCOMPLISHED BY USING DISINFECTED METAL OR PLASTIC TRASH CANS OR BOXES LINED WITH STRONG POLYETHYLENE FILM OR STRONG PLASTIC BAGS. FOR PURITY, EIGHT DROPS (ONE TEASPOON) OF A 5.1/4% CHLORINE SOLUTION (e.g., CLOROX) SHOULD BE MIXED INTO EACH 5 GALLONS OF WATER.
- FOOD – ALL FOOD SHOULD REQUIRE NO REFRIGERATION AND SHOULD BE BROUGHT TO THE SHELTER IN AIRTIGHT CANS OR BOTTLES. UNDER SHELTER CONDITIONS PEOPLE WILL REQUIRE ABOUT HALF AS MUCH FOOD AS USUAL. FOODS SHOULD HAVE HIGH NUTRITIONAL VALUE AND A MINIMAL AMOUNT OF BULK (i.e., CANNED MEATS, FRUITS, VEGETABLES, DRIED CEREALS, ETC.).
- SANITATION – A METAL CONTAINER WITH A TIGHT-FITTING LID FOR USE AS A TOILET WITH WHICH PLASTIC BAGS CAN BE USED. TOILET PAPER, SOAP, TOWELS, SANITARY ITEMS AND A QUANTITY OF STRONG PLASTIC BAGS WILL BE NEEDED.
- MEDICAL SUPPLIES – A WELL-STOCKED FIRST-AID KIT COMPARABLE TO WHAT IS USUALLY KEPT AT HOME. TAKE SPECIAL MEDICINES FOR INFANTS AND OTHERS AND A GOOD FIRST-AID HANDBOOK.
- CLOTHING AND BEDDING – SEVERAL CHANGES OF CLEAN CLOTHING, ESPECIALLY SOCKS AND UNDERCLOTHING – DEPENDENT UPON THE WEATHER, BLANKETS, PILLOWS AND SLEEPING BAGS MAY ALSO BE NEEDED.
- PORTABLE RADIO – LASTLY, BUT HARDLY LEAST IMPORTANT, A PORTABLE RADIO WITH FRESH AND EXTRA BATTERIES. RADIO STATION BROADCASTS WILL ADVISE YOU WHEN IT IS SAFE TO ABANDON THE SHELTER AND ALSO PROVIDE YOU WITH OTHER IMPORTANT EMERGENCY INFORMATION.

EXPEDIENT FALLOUT SHELTER

TILT-UP DOORS AND EARTH

GENERAL INFORMATION

READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD. THE LOCATION SELECTED FOR THIS SHELTER SHOULD BE LEVEL OR GENTLY SLOPING DOWN AND AWAY FROM THE MASONRY WALL. A THREE PERSON SHELTER CAN BE CONSTRUCTED BY THREE PEOPLE WORKING A TOTAL OF 6 HOURS EACH.

STEP 1

LAY OUT THE TRENCH AND EARTH NOTCH WIDTHS, AS DIMENSIONED ON THE SECTION BELOW, ADJACENT TO A MASONRY WALL. DETERMINE THE LENGTH OF TRENCH AND NOTCH BY ALLOWING ONE DOOR WIDTH OF LENGTH PER PERSON TO BE SHELTERED.

STEP 2

EXCAVATE TRENCH AND EARTH NOTCH. PLACE EXCAVATED EARTH OUTSIDE SHELTER LIMITS FOR LATER USE.

STEP 3

REMOVE DOOR KNOBS FROM ALL DOORS. PLACE DOUBLE LAYER OF DOORS IN NOTCH AND AGAINST WALL AS SHOWN IN SKETCH. NAIL 1"x 8" BOARD TO DOOR EDGES AT ENTRANCE TO SERVE AS EARTH STOP. AFTER ATTACHING PLASTIC ENTRANCE COVER AS SHOWN, OR BUILD RETAINING WALL OF SANDBAGS IN LIEU OF BOARD. PLACE ONE DOOR ON EDGE LENGTHWISE AS THE END CLOSURE.

STEP 4

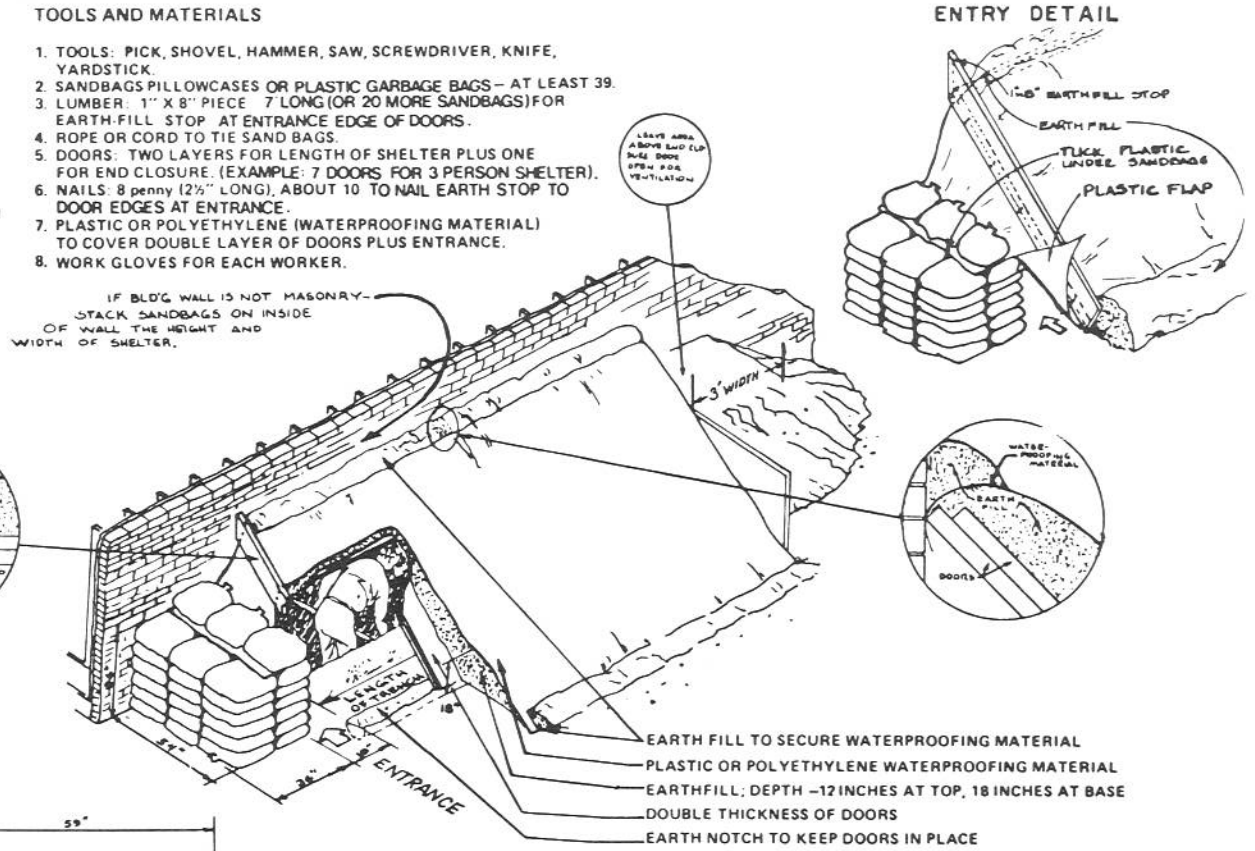
PLACE ONE END OF THE ROLLED UP WATERPROOFING MATERIAL UNDER THE TOP EDGE OF THE DOORS BEFORE EARTH FILL IS PLACED. BEGIN PLACEMENT OF EARTH FILL ON DOORS. COVER THE EARTH FILL WITH WATERPROOFING MATERIAL, SECURING IT WITH EARTH AT TOP AND BOTTOM TO PREVENT IT FROM BLOWING AWAY.

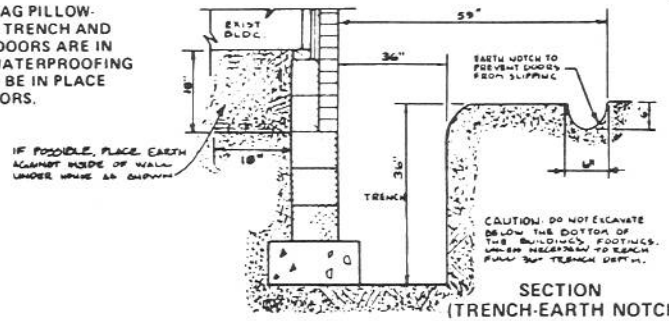
STEP 5

CONSTRUCT ENTRANCE – FILL "SANDBAG PILLOWCASES" WITH EARTH TAKEN FROM THE TRENCH AND STACK TO DIMENSIONS SHOWN AFTER DOORS ARE IN PLACE. PLASTIC OR POLYETHYLENE (WATERPROOFING MATERIAL) ENTRANCE COVER SHOULD BE IN PLACE BEFORE EARTH FILL IS PUT ON THE DOORS.

TOOLS AND MATERIALS

1. TOOLS: PICK, SHOVEL, HAMMER, SAW, SCREWDRIVER, KNIFE, YARDSTICK.
2. SANDBAGS PILLOWCASES OR PLASTIC GARBAGE BAGS – AT LEAST 39.
3. LUMBER: 1" X 8" PIECE 7' LONG (OR 20 MORE SANDBAGS) FOR EARTH-FILL STOP AT ENTRANCE EDGE OF DOORS.
4. ROPE OR CORD TO TIE SAND BAGS.
5. DOORS: TWO LAYERS FOR LENGTH OF SHELTER PLUS ONE FOR END CLOSURE. (EXAMPLE: 7 DOORS FOR 3 PERSON SHELTER).
6. NAILS: 8 penny (2½" LONG), ABOUT 10 TO NAIL EARTH STOP TO DOOR EDGES AT ENTRANCE.
7. PLASTIC OR POLYETHYLENE (WATERPROOFING MATERIAL) TO COVER DOUBLE LAYER OF DOORS PLUS ENTRANCE.
8. WORK GLOVES FOR EACH WORKER.





SECTION
(TRENCH-EARTH NOTCH)

IMPORTANT! Depending on the type of above-ground outside walls, and the type and saturated condition of the earth berm, some kind of vertical wall-shoring will probably be required.

FEMA2/
shelter-3-10

EXPEDIENT FALLOUT SHELTER

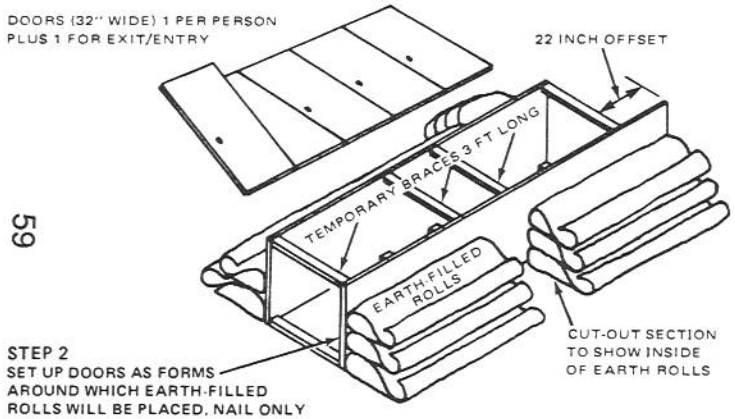
ABOVE-GROUND DOOR-COVERED SHELTER

GENERAL INFORMATION

THE ABOVE-GROUND DOOR-COVERED SHELTER IS DESIGNED FOR AREAS WHERE BELOW-GROUND SHELTERS ARE IMPRACTICAL BECAUSE THE GROUNDWATER TABLE OR BEDROCK IS CLOSE TO THE GROUND SURFACE. THIS SHELTER CAN BE BUILT BY FOUR PERSONS WORKING A TOTAL OF 10 HOURS EACH.

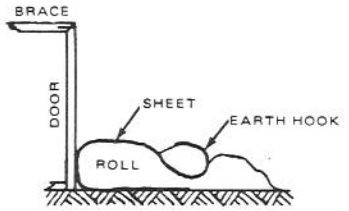
READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD. IF DOOR WIDTHS MEASURE LESS THAN 32 INCHES, USE A COMBINATION OF DOORS TO PROVIDE A MINIMUM OF 32 INCHES OF DOOR-WIDTH PER PERSON.

STEP 1
SELECT A SHELTER LOCATION WHERE THERE IS LITTLE OR NO CHANCE OF RAINWATER PONDING ON THE GROUND SURFACE. STAKE OUT SHELTER, REMOVE DOOR KNOBS. ALLOW 1 DOOR FOR EACH PERSON PLUS 1 DOOR FOR ENTRY/EXIT AT END. LIMIT IS 8 PERSONS PER SHELTER.



STEP 2
SET UP DOORS AS FORMS AROUND WHICH EARTH-FILLED ROLLS WILL BE PLACED. NAIL ONLY TOP BRACES. NAILS MUST BE REMOVED LATER. BRACE ALL CORNERS, CENTER, TOP AND BOTTOM OF EACH DOOR.

STEP 3
BEGIN TO PLACE EARTH-FILLED ROLLS AGAINST DOOR FORMS. TO FORM EARTH ROLLS, SEE EARTH-FILLED ROLL DETAIL BOTTOM OF PAGE.



STEP 4
DIG 14" DEEP, 36" WIDE TRENCH INSIDE SHELTER. EARTH CAN BE USED TO FORM SIDE EARTH-FILLED ROLLS. TRENCH CAN BE MADE UP TO 3 FEET DEEP IF CONDITIONS PERMIT.

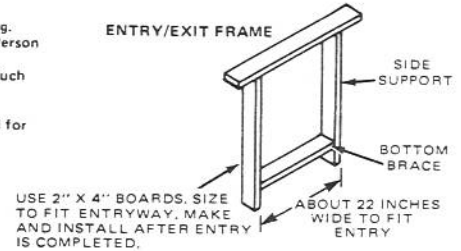
STEP 5
MOUND EARTH AGAINST THE EARTH-FILLED ROLLS AS SHOWN. CONTINUE PLACING EARTH AND SHEETS TO FORM EARTH-FILLED ROLLS.

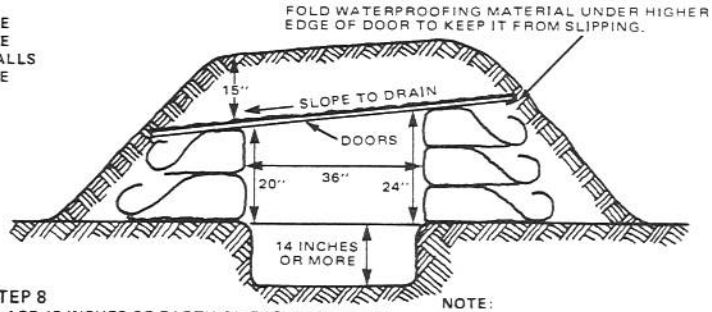
STEP 6
KEEP HEIGHT OF EARTH ABOUT EQUAL ON BOTH SIDEWALLS AS ROLLS ARE FORMED. AFTER SIDEWALLS HAVE REACHED PLANNED HEIGHT, REMOVE BRACES AND DOOR FORMS, USE SAME DOOR FORMS TO CONSTRUCT ENDWALLS WITH EARTH-FILLED ROLLS. PROVIDE EXIT/ENTRY AT END AS SHOWN.

STEP 7
REMOVE DOOR FORMS FROM ENDWALLS. POSITION ROOF DOORS IN THEIR FINAL POSITION. PLACE ENTRY FRAME FOR DOOR OVER ENTRY/EXIT. PLACE WATERPROOFING MATERIAL ON DOORS.

TOOLS AND MATERIALS

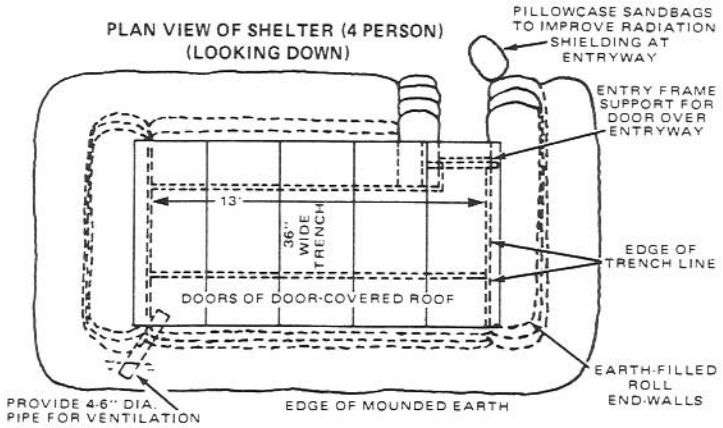
1. Doors as indicated.
2. Pick or Mattock and Shovel.
3. Two Buckets or Large Cans to Carry Earth.
4. Tape Measure, Yardstick or T Ruler.
5. Saw, Axe or Hatchet.
6. Hammer and at Least 20 Nails–2½" Long.
7. At Least 4 Double Bed Sheets for Each Person to be Sheltered.
8. Pillowcases and Rainproofing Materials Such as Plastic or Polyethylene.
9. Work Gloves for Each Worker.
10. Lumber for use as Temporary Braces and for Entry/Exit Frame.





STEP 8
PLACE 15 INCHES OF EARTH ON TOP OF SHELTER. IN HOT WEATHER CONSTRUCT A SHELTER VENTILATION AIR PUMP.

NOTE:
IF TRENCHING IS IMPRACTICAL HEIGHTEN WALLS BY USING ADDITIONAL EARTH ROLLS.



IMPORTANT! Except in cold weather, construct a second entryway at corner of shelter opposite to entryway shown. This is essential for cross-ventilation. The 4- to 6-inch pipe shown will not provide enough ventilation to prevent high heat buildup, except in cold weather (low temperature of about 30 degrees Fahrenheit).

EARTH-FILLED ROLL DETAIL

1. PLACE 2 FT OF SHEET ON GROUND AND TEMPORARILY DRAPE REMAINDER OF SHEET ON DOOR
2. PLACE EARTH ON SHEET–SHAPE AS SHOWN
3. FOLD SHEET OVER SHAPED EARTH
4. PLACE EARTH ONTO SHEET AT NARROW TRENCH
5. FOLD SHEET TO FORM EARTH HOOK. HOOK WILL ANCHOR SHEET
6. REPEAT TO FORM NEXT EARTH-FILLED ROLL

IMPORTANT! Consider expedient fallout shelters only as a LAST RESORT - - that is, if a public fallout shelter is not available OR if, for any reason, you've ruled out taking shelter in a home basement, larger public building, or in a mine, cave, or tunnel. If you do build an expedient fallout shelter, FOR SAFETY, FOLLOW INSTRUCTIONS CAREFULLY.

FEMA2/
shelter-3-11

EXPEDIENT FALLOUT SHELTER

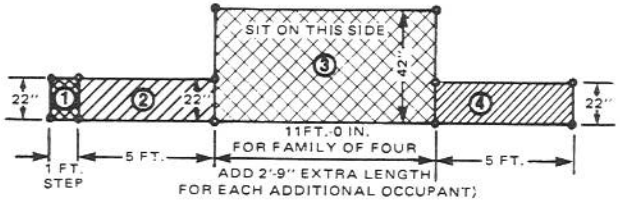
LOG-COVERED TRENCH SHELTER

GENERAL INFORMATION

THIS SHELTER IS DESIGNED FOR AREAS WHERE THE DEPTH BELOW THE GROUND SURFACE TO HARD ROCK OR GROUNDWATER IS BELOW THE BOTTOM OF THE TRENCH. ALSO, THE EARTH MUST BE SUFFICIENTLY FIRM AND STABLE SO THAT THE TRENCH SIDEWALLS WILL NOT CAVE IN. IN ADDITION, ADEQUATE SMALL TREES THAT CAN BE CUT FOR LOGS MUST BE AVAILABLE IN THE IMMEDIATE AREA. THE SHELTER (4-PERSON CAPACITY) CAN BE BUILT BY 4 PEOPLE WORKING A TOTAL OF 12 HOURS EACH. AFTER INITIAL COMPLETION, THE SHELTER CAN BE ENLARGED TO A WIDTH OF 5 FT. - 6 IN. AND DEEPENED TO 6 FT. HOWEVER, 9–FT LOGS MUST BE USED IN PLACE OF 7–FT LOGS AND THE BURIED ROOF MUST BE LARGE ENOUGH TO COVER THE WIDENED SHELTER DURING THE INITIAL CONSTRUCTION.

STEP 1

CLEAR AREA OF BRUSH AND TALL GRASS. LAYOUT SHELTER AS SHOWN BELOW.



LEGEND ● = WOOD OR METAL STAKE

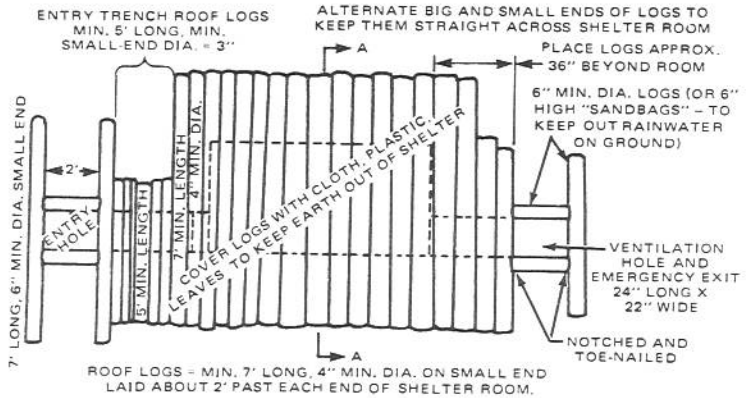
① ENTRANCE STEP 2'-6" DEEP	③ SHELTER ROOM 4'-6" DEEP
② ENTRANCE TRENCH 4'-0" DEEP	④ VENTILATION TRENCH 24" DEEP

STEP 2

BEGIN EXCAVATING THE TRENCH. PLACE EXCAVATED EARTH AT LEAST 3 FEET BEYOND THE EDGE OF TRENCH SO THAT THE ROOF LOGS CAN LATER BE PLACED OVER THE TRENCH.

STEP 3

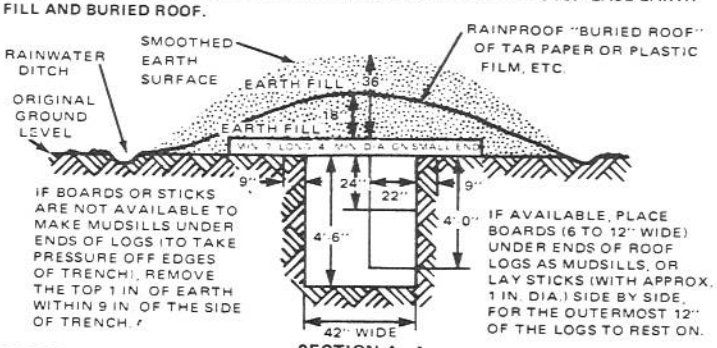
AS THE TRENCH EXCAVATION PROGRESSES, WORKERS SHOULD BEGIN CUTTING LOGS TO THE LENGTH AND SIZE AS SHOWN ON THE ILLUSTRATIONS.



PLAN VIEW OF TOP OF SHELTER

STEP 4

PLACE LOGS OVER TRENCH. POSITION TIES FOR BED SHEET CHAIRS OR HAMMOCKS. PLACE NEWSPAPER OR OTHER MATERIAL AS INDICATED OVER LOGS. PLACE EARTH FILL AND BURIED ROOF.



SECTION A–A

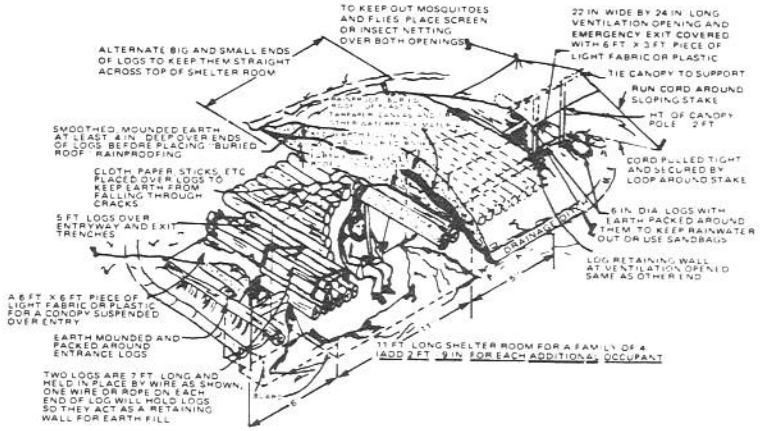
STEP 5

CONSTRUCT CANOPIES OVER THE OPENINGS

TOOLS AND MATERIALS

1. Saw and/or axe.
2. Pick or mattock.
3. Long-handled shovels.
4. Rainproofing material (plastic or polyethylene) 25 square yards. For each person above 4, add 2 sq. yds.
5. 50 feet of strong string or cord and a knife.
6. Tape measure or yard stick.
7. At least 8 pillow cases and/or sandbags.
8. Work gloves.
9. Bed sheets for use as "chairs" or "hammocks"– 1 per person at least 15 feet of strong rope or cord per bed sheet.
10. 15 pounds of newspapers to place over roof logs to keep earth from falling through cracks between logs

APPROX. NO. OF POLES REQ'D.	
45 – 7' LONG	4" DIA.
10 – 5' LONG	4" DIA.



PICTORIAL VIEW OF LOG-COVERED TRENCH SHELTER WITH PART OF THE ROOF CUT AWAY TO SHOW THE RAINPROOF "BURIED ROOF".

IMPORTANT! Consider expedient fallout shelters only as a LAST RESORT - - that is, if a public fallout shelter is not available OR if, for any reason, you've ruled out taking shelter in a home basement, larger public building, or in a mine, cave, or tunnel. If you do build an expedient fallout shelter, FOR SAFETY, FOLLOW INSTRUCTIONS CAREFULLY.

EXPEDIENT FALLOUT SHELTER

ABOVE-GROUND RIDGE-POLE

GENERAL INFORMATION

THIS SHELTER IS DESIGNED FOR AREAS WHERE THERE IS AN ABUNDANCE OF SMALL TREES AND BELOWGROUND SHELTERS ARE IMPRACTICAL. THE SHELTER (5 PERSON CAPACITY) CAN BE BUILT BY 5 PEOPLE WORKING A TOTAL OF 18 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE BEGINNING.

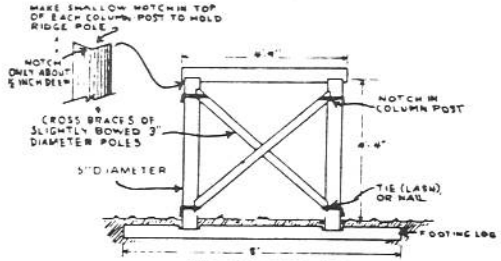
5-PERSON SHELTER IS ILLUSTRATED – FOR EACH PERSON ABOVE 5, MAKE RIDGE POLE 1 FT. LONGER. FOR 6 TO 8 PERSONS, USE 3 COLUMN POSTS – 10 to 14 PERSONS, USE 4 COLUMNS.

TOOLS AND MATERIALS

1. SAW TO CUT GREEN POLES (BOW OR CROSSCUT SAW PREFERRED), AND AN AXE.
2. SHOVEL (ONE SHOVEL FOR EACH TWO WORKERS).
3. LARGE BUCKETS, CANS, OR POTS WITH BAIL HANDLES TO CARRY EARTH.
4. KNIFE.
5. THREE DOUBLE-BED SHEETS FOR THE ILLUSTRATED 5-PERSON SHELTER, OR AN EQUIVALENT AREA OF EQUALLY STRONG FABRIC OR PLASTIC. ONE ADDITIONAL SHEET FOR EACH ADDITIONAL 2 OCCUPANTS. IF NOT AVAILABLE, USE STICKS AND SMALL POLES PLACED ACROSS THE 9-FT SIDE POLES AND COVER WITH GRASS OR LEAVES TO FILL IN THE SPACES BETWEEN THE POLES.
6. HAMMER AND AT LEAST 80 NAILS (3 IN. OR LONGER), OR AT LEAST 200 FT. OF ROPE OR STRONG WIRE, OR TWO ADDITIONAL BED SHEETS (OR OTHER FABRIC EQUALLY STRONG) FOR EACH PERSON TO BE SHELTERED – TO MAKE INTO FOOT-WIDE STRIPS TO SERVE AS "ROPE" WHEN TWISTED.
7. AT LEAST 2 SQUARE YARDS PER PERSON OF RAIN-PROOFING MATERIAL (SHOWER CURTAINS, PLASTIC TABLE CLOTHS, PLASTIC MATTRESS COVERS, ETC.) – ESSENTIAL IN RAINY COLD WEATHER.
8. GLOVES TO PREVENT INJURY AND BLISTERS TO HANDS.

STEP 1

CONSTRUCT RIDGE POLE FRAME



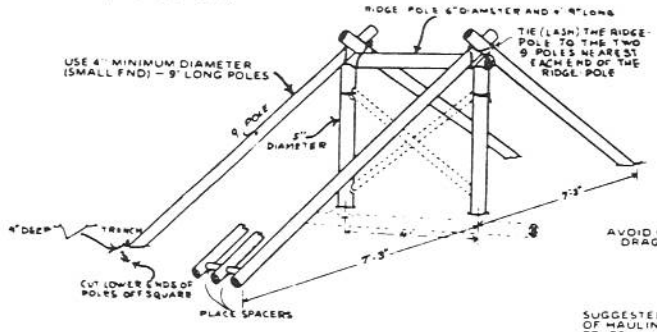
RIDGE POLE FRAME

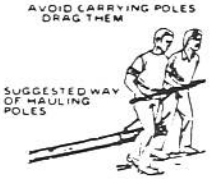
SIDE VIEW SHOWING CROSS BRACES OF COLUMN POSTS (IF LARGE NAILS ARE AVAILABLE, SIMPLY NAIL TWO SIMILARLY SLOPING CROSS-BRACES ON OPPOSITE SIDES OF THE COLUMN-POSTS.) FOR SHELTERS WITH THREE OR MORE COLUMN POSTS USE ONLY ONE BRACE BETWEEN EACH PAIR OF POSTS AND SLOPE BRACES ALTERNATELY IN DIFFERENT DIRECTION.

APPROX. NUMBER OF POLES REQ'D				
20	POLES	9' LONG	x 4" DIA.	
1	"	4'9" "	x 6" "	
2	"	4'4" "	x 5" "	
2	"	14' "	x 4" "	
2	"	6' "	x 3" "	CROSS BRACES
1	"	8' "	x 6" "	FTG POLE
SHELTER SIDES				
40	POLES	3'-4'6" "	x 2½" "	
24	"	1'-4'6" "	x 2½" "	
120	"	2'-6' "	x 3" "	
ENTRY				
4	"	8' "	x 2½" "	
13	"	20" "	x 2½" "	
48	"	32" "	x 2½" "	ROOF
64	"	36" "	x 2½" "	SIDES

STEP 2

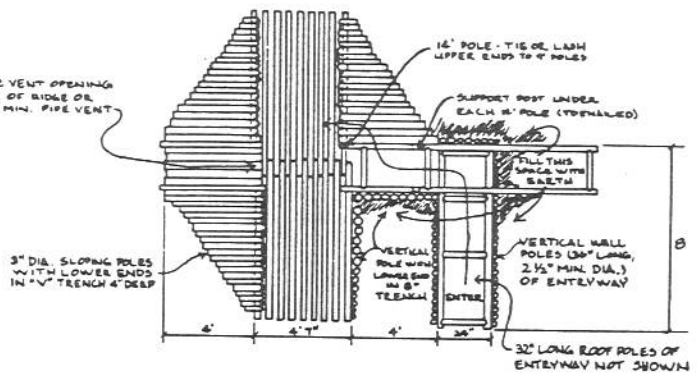
DIG 4" DEEP "V" TRENCH IN EARTH AND PLACE 9' ROOF POLES IN TRENCH AND ON RIDGE-POLE FRAME AS SHOWN.



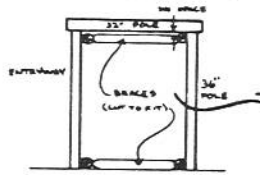


STEP 3

CONSTRUCT ENTRYWAY



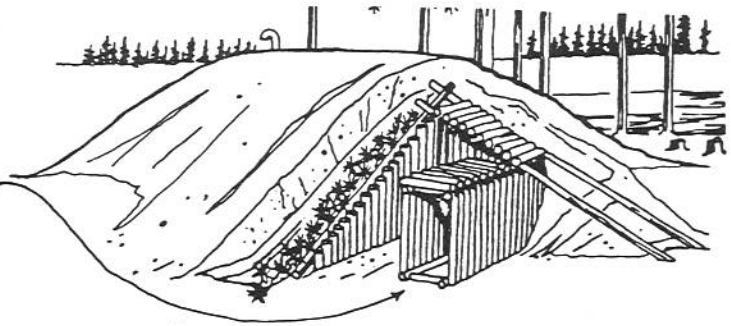
VIEW LOOKING DOWN ON SHELTER WITH ALL POLES IN PLACE EXCEPT THE ROOF POLES OF THE ENTRYWAY

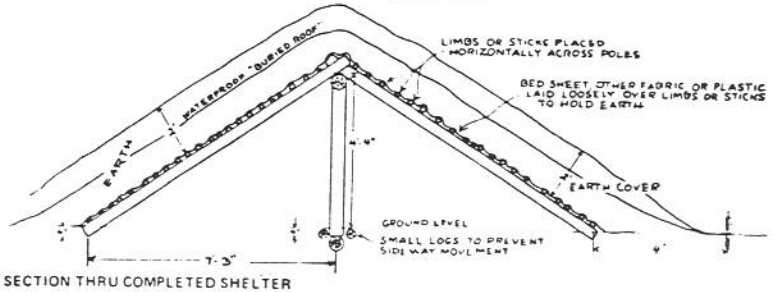


ENTRYWAY DETAIL

STEP 4

PLACE LIMBS OR STICKS AND BEDSHEETS ACROSS ROOF POLES. PLACE EARTH FILL AND WATERPROOFING MATERIALS AS ILLUSTRATED.





SECTION THRU COMPLETED SHELTER

FEMA2/shelter-3-10

IMPORTANT! Consider expedient fallout shelters only as a LAST RESORT--that is, if a public fallout shelter is not available OR if, for any reason, you've ruled out taking shelter in a home basement, larger public building, or in a mine, cave, or tunnel. If you do build an expedient fallout shelter, FOR SAFETY, FOLLOW INSTRUCTIONS CAREFULLY.

EXPEDIENT FALLOUT SHELTER

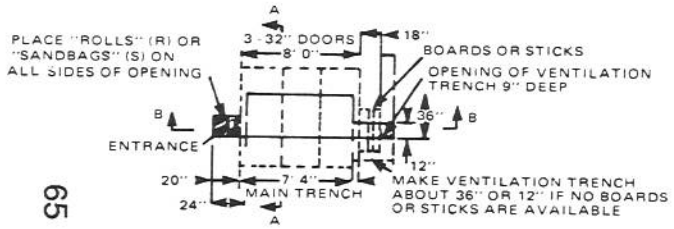
DOOR–COVERED TRENCH SHELTER

GENERAL INFORMATION

THIS SHELTER IS DESIGNED FOR AREAS WHERE THERE IS A SHORTAGE OF SMALL TREES AND/OR BUILDING MATERIALS. THE DEPTH TO GROUND WATER AND ROCK MUST ALSO BE BELOW THE BOTTOM OF THE TRENCH. IN ADDITION, THE EARTH MUST BE SUFFICIENTLY FIRM AND STABLE SO THAT THE TRENCH WALLS WILL NOT COLLAPSE. THE SHELTER (3-PERSON CAPACITY) CAN BE CONSTRUCTED BY 3 PEOPLE WORKING AN APPROXIMATE TOTAL OF 12 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE BEGINNING TO BUILD.

STEP 1

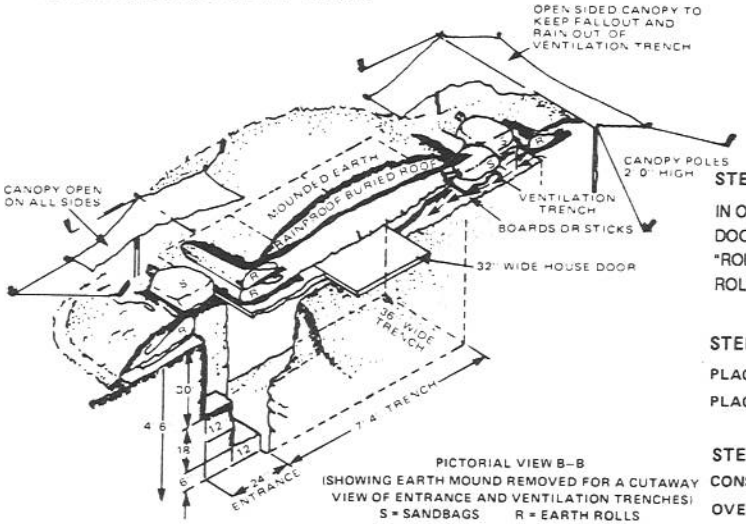
SELECT A REASONABLY LEVEL SITE. LAY OUT THE SHELTER AS ILLUSTRATED BY LAYING DOORS SIDE BY SIDE TO DETERMINE THE SHELTER LENGTH. DOOR KNOBS SHOULD BE REMOVED.



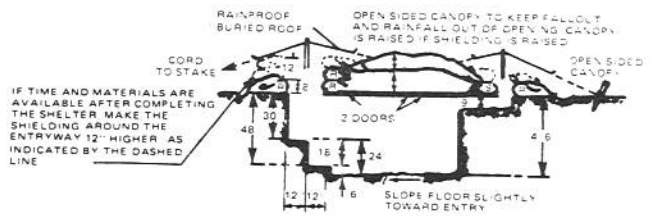
LAYOUT FOR 3-PERSON CAPACITY

STEP 2

EXCAVATE THE SHELTER TRENCH, ENTRYWAY AND VENTILATION TRENCH AS SHOWN. PILE THE EXCAVATED EARTH AT LEAST 3 FEET BEYOND THE TRENCH LIMITS SO THAT IT WILL NOT INTERFERE WITH THE LATER PLACEMENT OF DOORS OVER THE TRENCH.



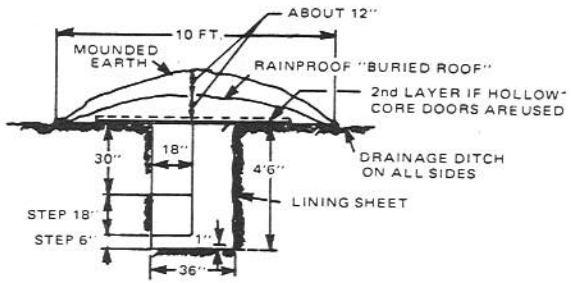
PICTORIAL VIEW B–B
(SHOWING EARTH MOUND REMOVED FOR A CUTAWAY VIEW OF ENTRANCE AND VENTILATION TRENCHES)
S = SANDBAGS R = EARTH ROLLS



SECTION B–B

STEP 3

IF THERE ARE ADEQUATE SHEETS OR FABRIC AVAILABLE, LINE THE TRENCH WALLS WITH THEM. THEN PLACE DOORS OVER THE TRENCH.



SECTION A–A

STEP 4

IN ORDER TO HOLD IN PLACE AN ADEQUATE AMOUNT OF EARTH ON TOP OF THE DOORS, CONSTRUCT EARTH "ROLLS" AROUND THE ENTRY-WAY AS SHOWN. THE "ROLLS" WILL KEEP THE EARTH FILL IN PLACE. SEE HOW TO MAKE AN EARTH ROLL AT RIGHT.

STEP 5

PLACE EARTH FILL AND THE WATERPROOFING MATERIAL OVER THE DOORS. PLACE SANDBAGS AS SHOWN ON THE ILLUSTRATIONS.

STEP 6

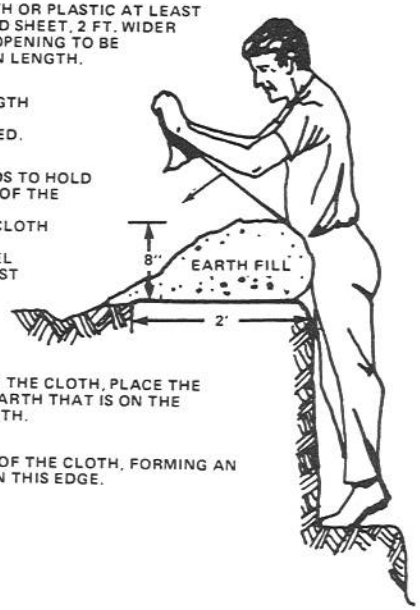
CONSTRUCT SHALLOW DRAINAGE DITCHES ON ALL SIDES AND PLACE CANOPIES OVER THE OPENINGS.

TOOLS AND MATERIALS

1. Doors (interior solid or hollow-core)—1 full size (32" minimum width) for each person. If doors measure less than 32" in width, use a combination of doors to provide the minimum width per person. IF DOORS ARE HOLLOW CORE-USE TWO LAYERS.
2. Pick and/or mattock.
3. Long-handled shovels and square-bladed shovel.
4. Rainproofing material—(e.g., plastic sheeting, canvas, plastic table covers, etc.) at least 25 square feet per person plus 2 pieces about 6 ft. by 6 ft. for use as canopies.
5. One bedsheet or the equivalent of 50 sq. ft. of cloth or plastic per person to line trench and make earth-filled rolls.
6. Two pillowcases per person to use as sandbags.
7. String or cord to tie canopies and sandbags.
8. Knife.
9. Several boards about 3 feet long.
10. Measuring tape and/or ruler.
11. Work gloves for each worker.
12. Hammer and hand saw.

HOW TO MAKE AN EARTH ROLL

1. SELECT A PIECE OF CLOTH OR PLASTIC AT LEAST AS STRONG AS A NEW BED SHEET, 2 FT. WIDER THAN THE SIDE OF THE OPENING TO BE PROTECTED, AND 5 FT. IN LENGTH.
2. PLACE 2 FT. OF THE LENGTH OF THE CLOTH ON THE GROUND, AS ILLUSTRATED.
3. WHILE USING BOTH HANDS TO HOLD UP 3 FT. OF THE LENGTH OF THE CLOTH AND WHILE PRESSING AGAINST THE CLOTH WITH YOUR BODY, HAVE ANOTHER PERSON SHOVEL EARTH ONTO AND AGAINST THE CLOTH.



4. WHILE STILL PULLING ON THE CLOTH, PLACE THE UPPER PART OVER THE EARTH THAT IS ON THE LOWER PART OF THE CLOTH.
5. COVER THE UPPER EDGE OF THE CLOTH, FORMING AN EARTH-FILLED "HOOK" IN THIS EDGE.

IMPORTANT! Consider expedient fallout shelters only as a LAST RESORT - - that is, if a public fallout shelter is not available OR if, for any reason, you've ruled out taking shelter in a home basement, larger public building, or in a mine, cave, or tunnel. If you do build an expedient fallout shelter, FOR SAFETY, FOLLOW INSTRUCTIONS CAREFULLY.

FEMA2/shelter-3-11

EXPEDIENT FALLOUT SHELTER

CRIB-WALLED SHELTER (ABOVE GROUND)

GENERAL INFORMATION

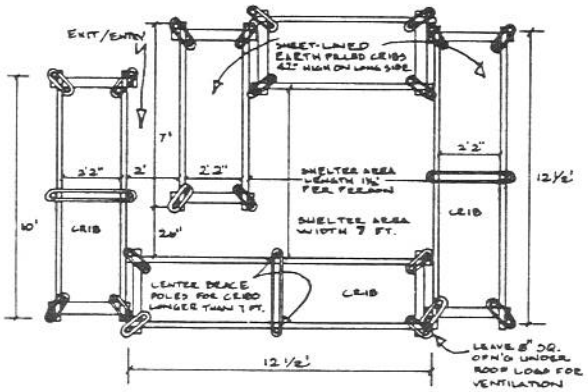
THIS SHELTER CAN BE CONSTRUCTED IN AREAS WHERE THERE IS AN ABUNDANCE OF SMALL TREES. THE APPROXIMATE AMOUNT OF TIME AND EFFORT REQUIRED TO BUILD THIS SHELTER (CAP. FOR 5) IS 5 PERSONS WORKING A TOTAL OF 18 HOURS EACH. READ AND STUDY ALL INSTRUCTIONS BEFORE STARTING TO BUILD.

TOOLS & MATERIALS

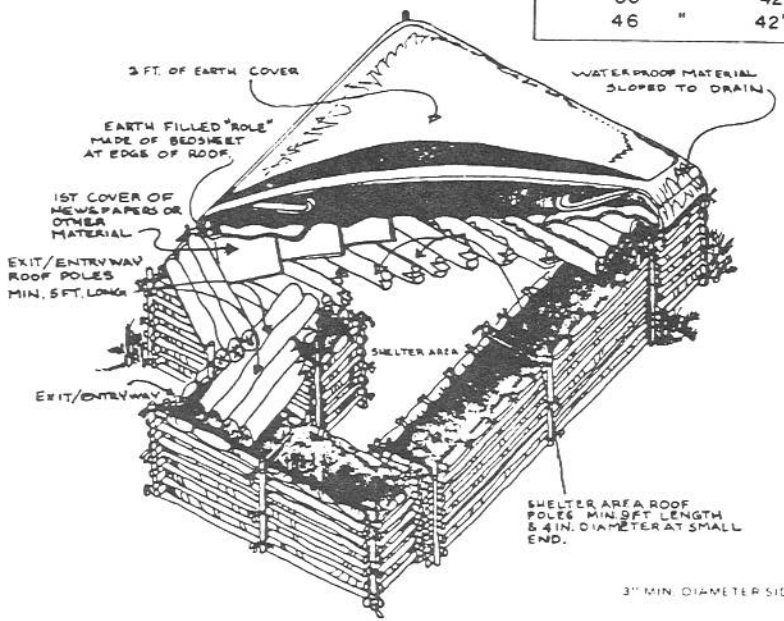
(FOR 5-PERSON CAPACITY)

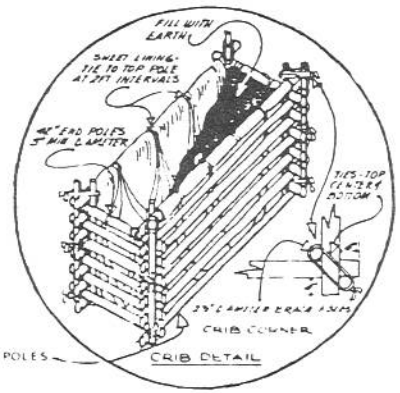
1. SAW AND/OR AXE TO CUT TREE POLES.
2. SHOVELS (ONE FOR EACH TWO WORKERS).
3. LARGE CANS, BUCKETS AND/OR POTS WITH BAIL HANDLES TO CARRY EARTH.
4. KNIFE OR SCISSORS.
5. AT LEAST 300 FT OF STRONG WIRE OR 300 FT OF ROPE, OR 8 DOUBLE BED SHEETS (TO TEAR INTO 1-FOOT-WIDE STRIPS, TO SERVE AS ROPE WHEN SLIGHTLY TWISTED). FOR EACH ADDITIONAL PERSON ABOVE 5, 20 FT OF ROPE, OR HALF A DOUBLE BED SHEET IS NEEDED.
6. AT LEAST 30 SQUARE YARDS, PLUS 2 SQUARE YARDS PER PERSON ABOVE 5, OF RAINPROOF ROOF MATERIALS (SHOWER CURTAINS, PLASTIC TABLE CLOTHS, PLASTIC MATTRESS COVERS, ETC.).
7. 15 DOUBLE BED SHEETS FOR AN EQUAL AREA OF CLOTH OR PLASTIC AT LEAST AS STRONG AS BED SHEETS. 2 ADDITIONAL SHEETS PER PERSON ABOVE 5.
8. GLOVES TO PROTECT HANDS FROM INJURY AND BLISTERS, 1 FOR EACH WORKER.
9. 15 POUNDS OF NEWSPAPER FOR ROOF COVER.

FLOOR PLAN



APPROX. NUMBER OF POLES REQ'D.					
28	POLES	12'6" LONG	x	3"	DIAMETER
14	"	10' "	x	3"	"
20	"	9' "	x	4"	" > ROOF
10	"	5' "	x	4"	"
28	"	7' "	x	3"	"
60	"	42" "	x	3"	"
46	"	42" "	x	2½"	" CORNER BRACES





STEP 1

SELECT A SHELTER LOCATION WHERE THERE IS LITTLE OR NO CHANCE OF THE GROUND BEING COVERED WITH WATER IF IT RAINS HARD. STAKE OUT THE ENTIRE SHELTER, LOCATING THE 5 REQUIRED CRIBS.

STEP 2

CUT POLES HAVING TOPS WITH DIAMETERS (NOT INCLUDING BARK) NO SMALLER THAN THE DIAMETERS SPECIFIED ON THE ILLUSTRATION FOR EACH TYPE POLE.

STEP 3

SORT THE POLES BY SIZE (LENGTH AND DIAMETER) AND LAY ALL POLES OF EACH SIZE TOGETHER NEAR THE SHELTER SITE. CUT OFF ALL LIMBS SO THAT POLES ARE SMOOTH. DETERMINE IF ENOUGH LONG SINGLE POLES CAN BE OBTAINED FOR THE SIDE-POLES OF THE 2 CRIBS ON THE LONG SIDES OF THE SHELTER. USUALLY, IF THE SHELTER IS TO BE BUILT FOR MORE THAN 7 PERSONS (15½-FOOT POLES REQUIRED), IT IS BETTER TO USE 2 CRIBS PLACED END-TO-END INSTEAD OF ONE CRIB THAT REQUIRES THE LONGER POLES.

STEP 4

A. PLACE TWO SIDE-POLES ON THE GROUND AND PUT 2 OF THE 3½ FT END-POLES ON TOP OF THE SIDE POLES SO THAT THE ENDS OF ALL 4 POLES STICK OUT 4" BEYOND WHERE THEY CROSS.
B. STACK PAIRS OF END-POLES AND SIDE-POLES TO MAKE THE CRIB (WHILE KEEPING THE CRIB VERTICAL) TO A HEIGHT OF 42". TO KEEP THE TOP POLES OF THE CRIB LEVEL, ALTERNATE THE DIRECTION OF THE BIG AND SMALL ENDS OF THE POLES.
C. PLACE A PAIR OF VERTICAL CORNER BRACE-POLES IN EACH OF THE 4 CORNERS OF THE CRIB. BRACE-POLES SHOULD BE CUT OFF AT THE SAME HEIGHT AS THE UPPER SIDES OF THE UPPER-MOST HORIZONTAL POLES TO WHICH THEY WILL BE TIED.
D. TIE THE PAIR OF BRACE-POLES TOGETHER (AT BOTTOM, MIDDLE, AND TOP) USING 3-FT LENGTHS OF WIRE, ROPE, OR TWISTED 1-FT-WIDE STRIPS OF CLOTH.
E. IF THE CRIB IS MORE THAN 7 FT LONG, PLACE A PAIR OF CENTER BRACE-POLES IN POSITION, ONE AGAINST THE OUTSIDE OF EACH LONG CRIB. TIE THE PAIR OF BRACE-POLES IN POSITION, ONE AGAINST THE OUTSIDE OF EACH LONG CRIB. TIE THE PAIR OF BRACE-POLES TOGETHER PERMANENTLY, JUST ABOVE THE GROUND. TEMPORARILY TIE EACH OF THEM TO THE UPPERMOST SIDE-POLE.
F. LINE THE CRIB WITH CLOTH (OR PLASTIC FILM), MAKING SURE AT LEAST A FEW INCHES OF LINING HANGS OVER THE UPPERMOST POLES. TIE THE UPPER EDGE OF THE LINING TO THE UPPERMOST WALL-POLE EVERY 2 FT., AFTER FIRST CUTTING A SMALL HOLE THROUGH WHICH TO THREAD THE TIE-STRING OR A 4"-WIDE TIE STRIP OF CLOTH.
G. PERMANENTLY TIE TOGETHER THE CENTER BRACE-POLES USING HORIZONTAL TIES AT CENTER AND TOP.
H. FILL THE LINED CRIB WITH EARTH FROM WHICH ALL GRASS, ROOTS, ETC., HAVE BEEN REMOVED.

STEP 5

PUT THE 9-FT ROOF-POLES IN PLACE. PLACE THE STRONGEST POLES AT THE ENTRYWAY, THEN PLACE THE SHORTER (5 TO 6 FT) POLES OVER THE ENTRYWAY.

STEP 6

TO KEEP EARTH FROM FALLING BETWEEN THE CRACKS OF THE ROOF, PUT STICKS IN THE LARGER CRACKS AND COVER THE ROOF WITH TWO OR MORE THICKNESSES OF NEWSPAPER OR OTHER MATERIAL.

STEP 7

PUT EARTH COVER ON THE ROOF TO THE DEPTHS SHOWN ON THE ILLUSTRATIONS. BE SURE TO SLOPE THE MOUNDED EARTH SURFACE DOWNWARD TOWARD THE EDGES SO THE ROOF WILL SHED WATER. USE BEDSHEETS TO FORM "EARTH ROLLS" AT THE ROOF EDGE. THE SHEETS WILL SERVE AS FORMS TO HOLD EARTH IN PLACE. CLUMPS OF TURF CAN BE SUBSTITUTED AT ROOF EDGES FOR THE BEDSHEETS. PLACE THE WATER PROOFING MATERIAL BEFORE PLACING THE FINAL 6 INCHES OF EARTH COVER.

STEP 8

IF THE WEATHER IS HOT, BUILD AND INSTALL A SHELTER VENTILATING PUMP. SEE SEPARATE INSTRUCTIONS ON VENTILATION FOR EXPEDIENT SHELTERS.

IMPORTANT! Consider expedient fallout shelters only as a LAST RESORT - - that is, if a public fallout shelter is not available OR if, for any reason, you've ruled out taking shelter in a home basement, larger public building, or in a mine, cave, or tunnel. If you do build an expedient fallout shelter, FOR SAFETY, FOLLOW INSTRUCTIONS CAREFULLY.

FEMA2/
shelter-3-12

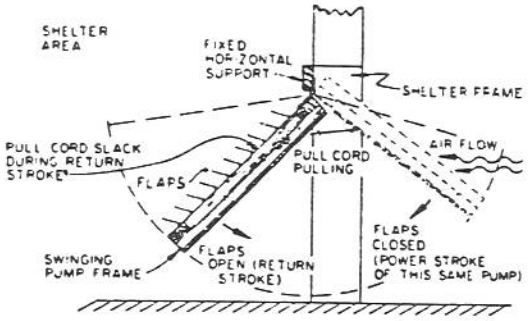
EXPEDIENT FALLOUT SHELTER

AIR VENTILATION PUMP – EMERGENCY LAMP – BUCKET STOVE

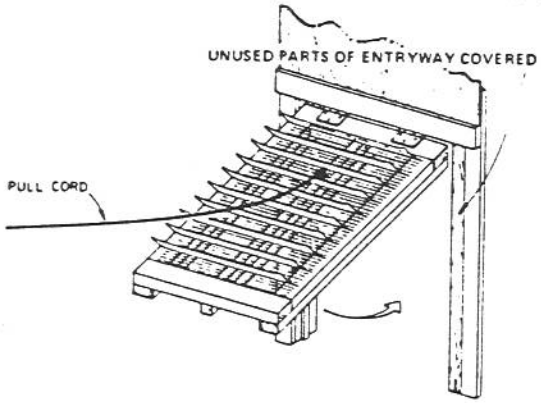
ALL EXPEDIENT SHELTERS ARE DESIGNED TO PROVIDE FOR SOME NATURAL VENTILATION. IN VERY HOT WEATHER, ADDITIONAL VENTILATION MAY BE REQUIRED TO PROVIDE A LIVABLE TEMPERATURE. CONSTRUCTION OF AN AIR PUMP THAT CAN PROVIDE ADDITIONAL VENTILATION IS ILLUSTRATED BELOW.

STUDY ALL INSTRUCTIONS BEFORE STARTING CONSTRUCTION

STEP 1 AIR PUMP



THE AIR PUMP OPERATES BY BEING SWUNG LIKE A PENDULUM. IT IS HINGED AT THE TOP OF ITS SWINGING FRAME. IT IS SWUNG BY PULLING AN ATTACHED CORD. THE FLAPS ARE FREE TO ALSO SWING AND WHEN THEY ARE IN THE CLOSED POSITION, AIR IS PUSHED THROUGH THE OPENING THAT THE PUMP IS ATTACHED TO.



TO OBTAIN MAXIMUM EFFICIENCY AND MOVE THE LARGEST AMOUNT OF AIR, THE UNUSED PORTIONS OF THE ENTRYWAY SHOULD BE COVERED WITH WOOD, PLASTIC, CLOTH, STIFF PAPER OR SIMILAR MATERIALS.

STEP 2 MATERIALS AND TOOLS NEEDED TO CONSTRUCT AN AIR PUMP

(MATERIALS SIZED FOR A 36 INCH BY 29-INCH PUMP) LUMBER SIZES CAN BE ALTERED, DEPENDING ON AVAILABILITY.

*A. LUMBER

SIZE	QUANTITY	SIZE	QUANTITY
1" X 2" X 36"	2	1" X 2" X 32"	2
1" X 1" X 36"	1	1" X 1" X 32"	1
1" X 2" X 29"	2	1" X 4" X 36"	1

B. ONE PAIR ORDINARY DOOR OR CABINET BUTT HINGES, OR METAL STRAP HINGES, OR IMPROVISED HINGES MADE OF LEATHER, WOVEN STRAPS, CORDS OR FOUR HOOK & EYE SCREWS WHICH CAN BE JOINED TO FORM TWO HINGES.

C. 24 NAILS ABOUT 2" LONG, PLUS SCREWS FOR HINGES.

*D. POLYETHYLENE FILM, 3 TO 4 MILS THICK, OR PLASTIC DROP-CLOTH, OR RAINCOAT-TYPE FABRIC, OR STRONG HEAVY PAPER – 10 RECTANGULAR-SHAPED PIECES, 30" X 5½".

*E. 30' OF SMOOTH, STRAIGHT WIRE FOR USE AS FLAP PIVOT WIRES – (ABOUT AS THICK AS COAT-HANGER WIRE) OR CUT FROM 10 WIRE COAT HANGERS, OR 35' OF NYLON STRING (COAT-HANGER WIRE THICKNESS).

*F. 30 SMALL STAPLES, OR SMALL NAILS, OR 60 TACKS TO ATTACH FLAP PIVOT WIRES TO WOOD FRAME.

*G. 30' OF ¾" TO 1" WIDE PRESSURE-SENSITIVE WATERPROOF TAPE THAT DOES NOT STRETCH, OR USE NEEDLE AND THREAD TO SEW HEM TUNNELS TO THE FLAPS.

*H. FOR FLAP STOPS, 150 FT OF LIGHT STRING, STRONG THREAD, OR THIN SMOOTH WIRE. 90 TACKS OR SMALL NAILS TO ATTACH FLAP STOPS TO THE WOOD FRAME, OR FLAP STOPS CAN BE TIED TO THE FRAME.

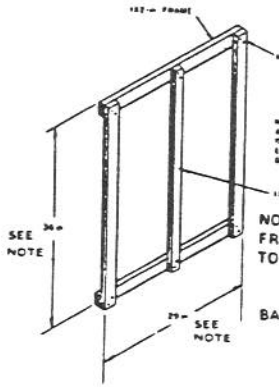
I. 10 FEET OF CORD FOR THE PULL CORD.

J. DESIRABLE TOOLS: HAMMER, SAW, WIRECUTTER-PLIERS, SCREWDRIVER, SMALL DRILL, SCISSORS, KNIFE, YARDSTICK, AND PENCIL.

* Items must be sized or adjusted to fit opening into which airpump is to be placed.

STEP 3 HOW TO CONSTRUCT THE AIR PUMP

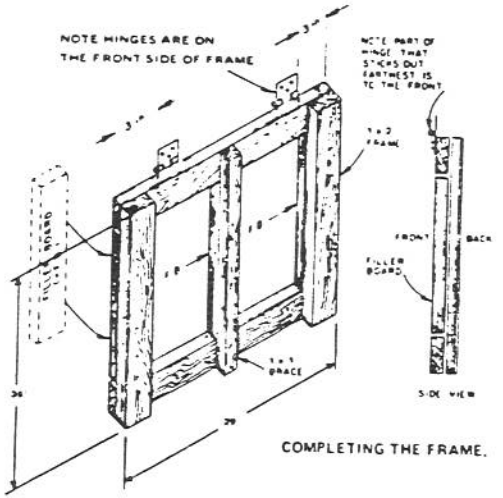
A. CUT LUMBER AND ASSEMBLE FRAME AS SHOWN



NOTE: DIMENSIONS SHOWN FOR FRAME MAY HAVE TO BE ADJUSTED TO FIT OPENINGS IN A SHELTER.

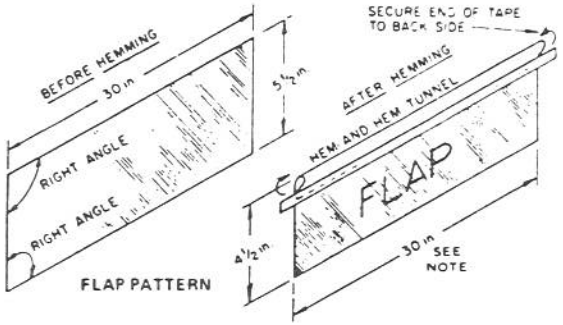
BACK SIDE OF FRAME

B. COMPLETE FRAME AND ATTACH HINGES. IF DRILL IS NOT AVAILABLE TO DRILL SCREW HOLES TO ATTACH HINGES, USE A NAIL TO MAKE THE HOLES.



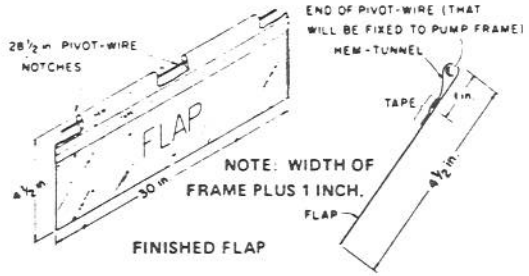
COMPLETING THE FRAME.

C. CUT 10 RECTANGULAR STRIPS 30" LONG BY 5½" WIDE FOR USE AS FLAPS. HEM FLAPS AS SHOWN. USE PRESSURE SENSITIVE TAPE OR SEW HEM SHUT TO FORM HEM TUNNEL.

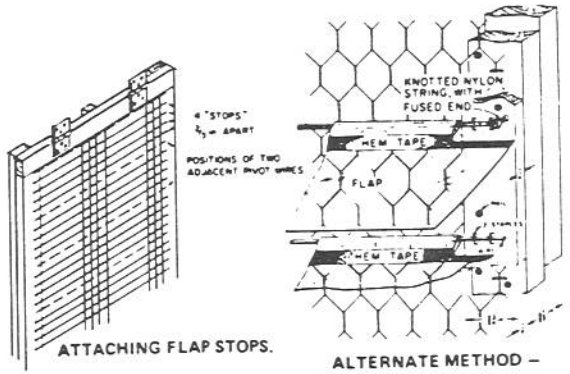


NOTE: WIDTH OF FRAME PLUS 1 INCH

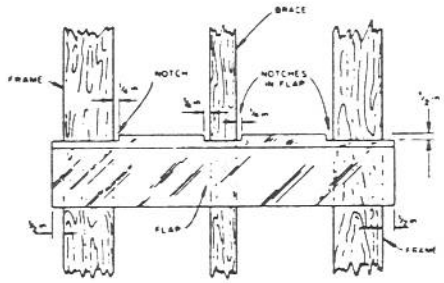
INSERT 10 PIECES OF STRAIGHT WIRE (PIVOT WIRES) INTO FLAP HEM AS SHOWN. FLAPS SHOULD SWING FREELY. STRING CAN BE USED IF WIRE NOT AVAILABLE (WIRE COAT-HANGER THICKNESS).



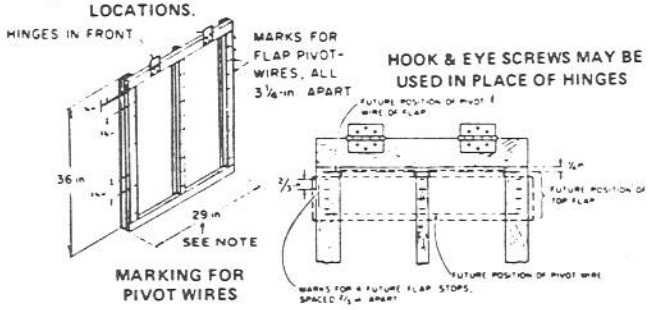
E. ATTACH FLAP STOPS (STRINGS OR WIRES) TO THE PUMP FRAME AT THE MARKED LOCATIONS. 4 FLAP STOPS ARE NEEDED BETWEEN ADJACENT PIVOT WIRES.



AFTER HEM IS MADE, CUT NOTCHES IN FLAPS AS SHOWN. AVOID CUTTING TAPE THAT HOLDS HEM.



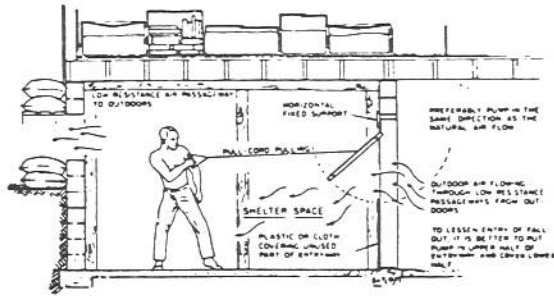
D. MARK PUMP FRAME FOR PIVOT WIRE AND FLAP STOP LOCATIONS.



NOTE: FRAME DIMENSIONS MAY HAVE TO BE ADJUSTED TO FIT OPENING IN SHELTER

F. STARTING FROM THE BOTTOM – STAPLE, NAIL, TACK OR TIE THE FLAP PIVOT-WIRES WITH FLAPS IN THEIR MARKED POSITIONS. ATTACH HINGES TO HORIZONTAL SUPPORT BOARD. ATTACH PULLCORD TO CENTER BRACE.

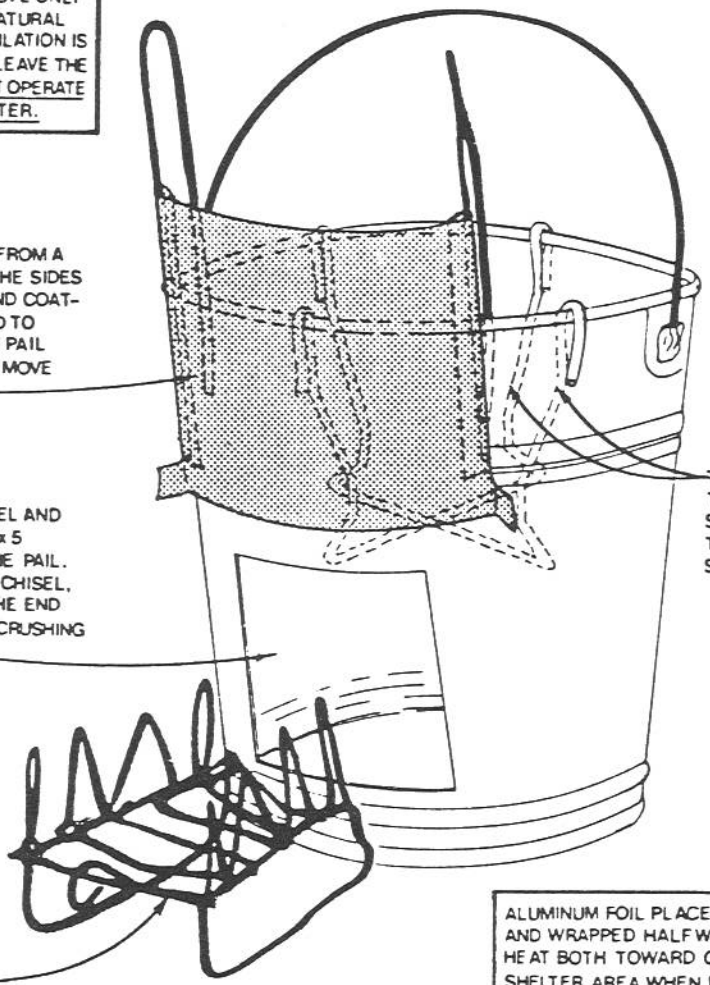
STEP 4. TYPICAL INSTALLATION OF AIR PUMP



BUCKET STOVE

THIS COMBINATION COOK-STOVE / SPACE HEATER IS MADE USING A 10 TO 16qt. METAL PAIL, SOME COAT-HANGER WIRE, AND METAL CUT FROM A LARGE JUICE OR VEGETABLE CAN. WHEN ASSEMBLED AS SHOWN. THE STOVE WILL BRING 3qts. OF WATER TO A BOIL USING AS FUEL ABOUT 1/2lb. OF DRY, TWISTED PAPER OR DRY WOOD. PIECES OF WOOD ABOUT 1/2 x 3/4 x 6 INCHES ARE BEST.

NOTE:
LOCATE COOK-STOVE ONLY WHERE EITHER NATURAL OR FORCED VENTILATION IS CAUSING AIR TO LEAVE THE SHELTER- DO NOT OPERATE IN A SEALED SHELTER.



CUT THE DAMPER FROM A JUICE CAN. BEND THE SIDES WITH PLIERS AROUND COAT-HANGER WIRE USED TO ATTACH DAMPER TO PAIL THIS ALLOWS IT TO MOVE UP AND DOWN.

USING A COLD CHISEL AND TIN SNIPS, CUT A 5 x 5 SQUARE HOLE IN THE PAIL. WHEN USING COLD CHISEL, PLACE PAIL OVER THE END OF A LOG TO AVOID CRUSHING THE PAIL.

TWO COAT HANGERS USED TO FORM COOK-POT SUPPORT. BEND AS SHOWN TO PRESS FIRMLY AGAINST SIDES OF BUCKET.

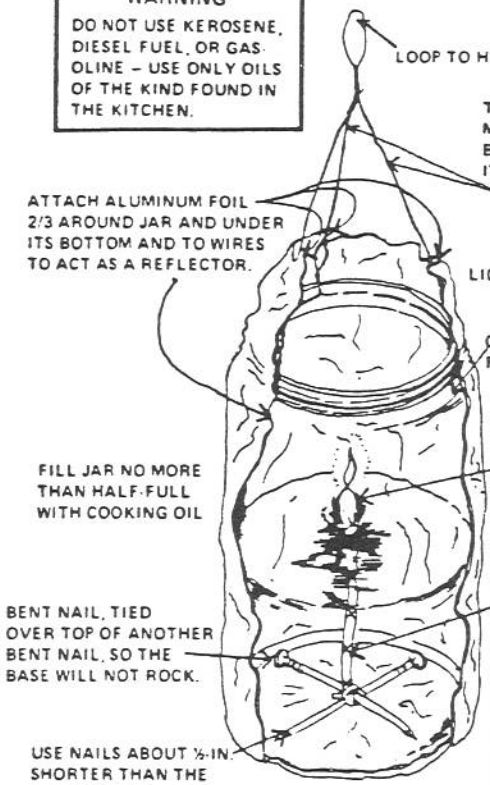
USE 4 OR 5 METAL COAT HANGERS TO FASHION A GRATE AS SHOWN

ALUMINUM FOIL PLACED IN BOTTOM OF PAIL AND WRAPPED HALFWAY AROUND IT REFLECTS HEAT BOTH TOWARD COOK-POT AND TOWARD SHELTER AREA WHEN DEVICE IS USED AS A SPACE HEATER.

EMERGENCY LAMP

THIS TYPE OF LAMP WILL PROVIDE LIGHT FOR USE IN EXPEDIENT SHELTERS – THE LAMP WILL BURN SLOWLY CONSUMING ABOUT 3 OUNCES OF COOKING OIL IN 24 HOURS.

WARNING
DO NOT USE KEROSENE, DIESEL FUEL, OR GASOLINE – USE ONLY OILS OF THE KIND FOUND IN THE KITCHEN.



LOOP TO HANG LAMP

TO LIGHT LAMP, FIRST MAKE MATCH LONGER BY BY TAPING OR TYING IT TO A STICK.

ATTACH ALUMINUM FOIL 2/3 AROUND JAR AND UNDER ITS BOTTOM AND TO WIRES TO ACT AS A REFLECTOR.

LIGHT WIRE

CLEAN GLASS JAR FREE OF LABELS

FILL JAR NO MORE THAN HALF-FULL WITH COOKING OIL

FLAME FROM END OF WICK IS JUST ABOVE OIL SURFACE

BENT NAIL, TIED OVER TOP OF ANOTHER BENT NAIL, SO THE BASE WILL NOT ROCK.

A FINE WIRE TIED IN ITS CENTER AROUND THE NAILS, WITH THE ENDS OF THE WIRE WOUND IN OPPOSITE DIRECTIONS AROUND THE COTTON-STRING WICK. USE COTTON THAT IS SLIGHTLY LESS THAN 1/8- in. IN DIAMETER. USE WINDOW SCREEN WIRE OR OTHER EQUALLY FINE WIRE.

USE NAILS ABOUT ⅛-IN. SHORTER THAN THE DIAMETER OF JAR

WIRE-STIFFENED WICK LAMP

KEEP EXTRA WIRE AND WICK-STRING IN SHELTER.

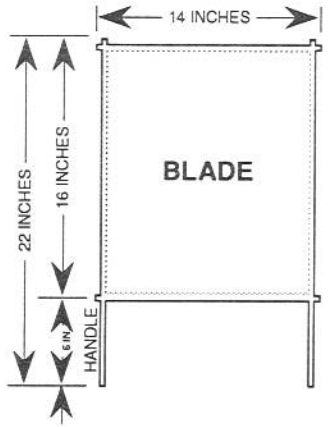
EXPEDIENT FALLOUT SHELTER

DIRECTIONAL FANNING TO VENTILATE AND COOL SMALLER SHELTERS

Directional fanning is the simplest way to force enough air through a basement, trench-type, or other expedient shelter to maintain endurable conditions, even in very hot weather. If you do not have the materials needed to construct the Air Ventilation Pump shown 2 pages above, then make the 2-handled directional fan shown here. The directional fan shown can provide enough air for up to 9 adults in a small shelter, in very hot weather. (A 2-handled fan is easier and less tiring to use than a 1-handled fan with the same size blade.

1. Constructing the Fan

Make the frame out of 2 sticks each 14 inches long and 2 sticks each 22 inches long. To strengthen the corners, overlap the sticks about one-half inch, as shown.



Use sawed sticks at least 3/8 x 3/4 inches in cross section. If you have very small nails or brads, use only one to connect each corner, then tie each corner securely. To prevent blistering your hands, wrap cloth around the fan handles, or wear gloves.

If you have to use sticks cut from a tree, select ones with diameters of about 3/4 inch, and make shallow notches in all 4 sticks before tying together the 4 corners of the blade. If you do not have strong string, use 3/4-inch-wide strips of bedsheet cloth, or other strong cloth, slightly twisted.

Cover the fan's blade with any strong, light fabric, such as bedsheet cloth. If you're going to sew on the cloth, first cut a 26 x 30-inch piece. Wrap the 30-inch width smoothly crosswise around the frame, after cutting 4 notches in the cloth's corners, so that the tied-together parts of the sticks will not be covered. Pin or tape the cloth to make a smooth blade; finally, sew securely. (If waterproof construction adhesive is available, you can use a smaller piece of cloth and cover the blade, which will take only a few minutes.)

If you are short on time and/or materials, you can make a fan of merely a piece of cloth connecting two 22-inch-long sticks. This very simple fan is reasonably effective, but it requires a lot of energy to use and may be tiring.

Because cardboard is likely to become damp and fragile in the humid air of a crowded shelter, use cardboard only if nothing better can be found. (Very light sheetmetal makes a good fan blade and requires only 2 sticks, but a blade of 1/4-inch plywood, for example, would be too heavy.)

If no sticks are available, a double thickness of heavy, stiff cardboard 22 inches long by 14 inches wide can be made into a handle-less fan. Securely tie or tape together the pieces. Use waterproof tape, if available, to cover the parts that you will grip while operating the fan so you won't dampen and soften the cardboard with sweaty hands. But note that cardboard is likely to become too soft in a humid shelter, so use it only as a last resort.

2. Using the Fan

For maximum ventilation, the air-intake opening of a shelter should be at least as large as its air-exhaust opening. If the air-exhaust opening of your small shelter is much larger than what's shown in the sketches, for more effective use block part of it off to reduce it to approximately 24 inches high by 20 inches wide. The air should be fanned out of the shelter in the direction in which the air is naturally flowing. For maximum ventilation, fan about 40 strokes a minute.

To fan air out through an air-exhaust opening, face the opening with your elbows about 4 inches lower than the bottom of the opening. Then count one, two, three while you:

One, quickly raise the fan to a vertical (straight-up) position close in front of your face.

Two, immediately fan (push) the air into the opening--ending your power stroke with your arms fully extended and with the fan almost horizontal (almost flat) in front of you and out of the way of air that was sucked behind the fan and is still flowing out through the opening.

Three, after a slight pause, leisurely withdraw the almost horizontal fan until the bottom of its blade almost touches your stomach--getting ready for the next power stroke.

To increase the flow of air through a shelter, while fanning the occupants:

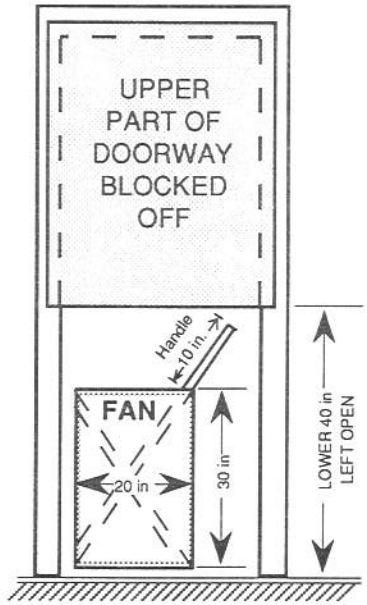
Have 2 or more occupants sitting inside the shelter each use a fan of the size described above to fan the air to increase its velocity in the direction in which air already is flowing through the shelter. (This kind of directional fanning is especially effective in increasing the air flow through small, narrow shelters.)

To avoid higher radiation exposures near openings, build an essentially airtight partition across the shelter room, with a 24-inch-high x 20-inch-wide hole in it through which to fan.

EXPEDIENT FALLOUT SHELTER

DIRECTIONAL FANNING TO VENTILATE AND COOL LARGER SHELTERS

To ventilate larger basements, big trenches, and other larger shelters lacking adequate ventilation, use one or more large 1-man fans. (See illustration.) The 20 x 30-inch fan blade is made like a 2-stick kite, and the upper end of the longer diagonal stick serves as a 10-inch handle. The model shown is made of two 1 x 2-inch boards, one 46 inches long and the other 35 inches long. These boards are connected at a point 17 1/2 inches from their lower ends, first with a single clinched nail, and then by being tied securely. The edges of the handle are rounded smooth.



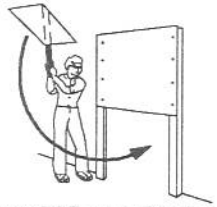
DOORWAY

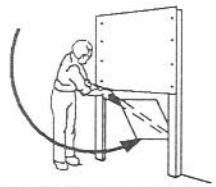
Cover the blade frame on both sides with strong bedsheet cloth. Wrap the cloth around and secure it to strong cords or wires tied to notches cut in the boards (or sticks) near the 4 corners of the blade. (If you can't get cord or wire, then four 2-inch wide strips of strong cloth, slightly twisted, will do.)

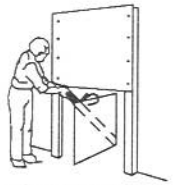
A durable but heavy fan can be made in a few minutes using a 20 x 30-inch piece of 1/4-inch plywood nailed to a single 46-inch long, 1 x 2-inch board. Or use a single round stick about 1 1/4 inches in diameter, flattened on one side. But note that a plywood fan will be very tiring to use.

A fan with a blade made of two sheets of very heavy cardboard tied on both sides of a 1 x 2-inch board is effective when dry. But typical cardboard will become soft and worthless as a fan in a crowded, long-occupied, and humid shelter. So use cardboard as a last resort--only if you can find nothing better.

To fan directionally, it's best to stand just outside and to one side of a doorway, so that your body doesn't get in the way of the air flow. Stand opposite and facing the open door, which should be secured open. Hold the fan like a golf club and swing it with your arm extended. Then slowly count one, two, three while you:


Start Of Power Stroke


End Of Power Stroke


Feathering Blade At Start Of Return Stroke


End Of Feathered Return Stroke

One, make the power stroke with the fan blade broadside.

Two, feather the blade by quickly turning it 90 degrees (upright), as shown in the illustration.

Three, make the pendulum-like return stroke with the fan blade kept edgewise ("feathered") to the air flow until the end, when you quickly turn it 90 degrees to get ready to make the next power stroke.

To pump more air, block off the upper part of the doorway with cloth, cardboard, plywood, etc., to prevent air from flowing back in the wrong direction through the upper part of the doorway.

Fan the air in the same direction that the air is naturally flowing through the shelter. More air usually can be pumped through a shelter if the fan is used to force air out through the air-exhaust opening. This reduces the air pressure inside the shelter and causes fresh outdoor air to be sucked into the shelter through the air-intake doorway, or other large air-intake openings. With one fan you can pump enough outdoor air--if it's properly distributed within the shelter--to maintain tolerable conditions for weeks for 25 people during extremely hot weather, and for up to about 300 people during cold weather.

To ventilate and cool a room having only one doorway and no other opening, do not block off any part of the doorway. If air is fanned into such a room through the lower part of its completely open doorway, then air will flow back out of the room through the upper part of the doorway. However, this pumps much less air than when a separate, large air-exhaust opening is provided.

SECTION 7

ACTIONS BY RISK AREA GOVERNMENTS TO PREPARE FOR CRISIS EVACUATION

This section outlines actions which may be taken by governments of risk areas during a period of international crisis to prepare for crisis evacuation, if they have not already developed detailed plans.

Risk area planning includes (1) allocation of risk-area population to host jurisdictions, including preparation of standby emergency information materials for the public on "where to go and what to do" if evacuation is implemented; and (2) risk area operations for the initial evacuation movement (including traffic control), for providing security in the risk area, for keeping essential indsutries and services in operation (by having key workers commute from nearby host areas), and for sheltering people still in the risk area in best available blast protection in case of attack.

Progress in developing plans and capabilities for the contingency of crisis evacuation will depend upon resources available. It is possible that a severe crisis could arise before detailed plans were completed for all U.S. risk areas, and it is conceivable that crisis evacuation could be implemented even though plans were not available for some risk areas. Also, a developing peacetime hazard (such as a hurricane, or a terrorist threat) could require rapid development of plans to evacuate threatened areas.

Thus, during an international crisis it would be prudent for risk area jurisdictions without detailed crisis evacuation plans to develop ad hoc or improvised plans for evacuation operations.

During a crisis situation, State civil defense (CD) personnel would probably *not* be able to provide detailed on-site guidance or assistance for each risk area. However, in most cases State staffs would be able to advise risk area planners on host counties set aside for each risk area and major routes to be used for auto and bus movement. In many cases, depending on the progress made previously in evacuation planning, the State could include maps showing the risk area and surrounding host counties, as well as general instructions on what things evacuees should take with them, on the nature of fallout and how to improvise protection, and related matters.

The State may also be able to provide copies of detailed planning guidance, and possibly examples of completed risk area plans or other jurisdictions in the State, including examples of Emergency Public Information (EPI) materials.

This section is not intended as a detailed guide to crisis evacuation planning for risk areas. Rather, it is a checklist of only the most important aspects of ad hoc or improvised arrangements for evacuating population from risk areas.

A high degree of initiative, improvisation, and coordination is required of government and non-government leaders in risk areas—and a high degree of cooperation from evacuees. Natural disaster experience shows, however, that most people will be highly cooperative if given timely, accurate, and authoritative information and instructions from government leaders.

Actions to Increase Risk Area Readiness for Population Evacuation

1. Obtain Information

CD director should obtain as much information as possible from the State staff concerning status of crisis evacuation planning in the State (as this affects the locality), and any indications of developing spontaneous evacuation. He should also, if possible, secure from the State copies of planning guidance, examples of completed risk area plans from elsewhere in the State, and other materials that would assist in rapid, ad hoc planning in the locality. This may include information on host areas set aside for the risk area and traffic routes, and possibly an initial draft of "where to go and what to do" EPI instructions.

2. Brief Head of Government

CD director brief head of government and other key executives on the situation, on potential local problems should crisis evacuation be implemented, on status of crisis evacuation planning within the State, and on initial planning (if any) affecting the jurisdiction.

CD director should also recommend participants for an initial meeting of governmental and other leaders to consider the situation and commence development of ad hoc evacuation plans. In risk areas of significant size, a number of jurisdictions may be involved (central city and suburbs) and *interjurisdictional coordination* will be of great importance, as well as coordination with State authorities (such as State police and CD agency). Thus, it may be advisable for the chief executive of the central city or major metropolitan county to take the lead in ad hoc planning for the entire risk area. A State CD Area director for the risk area may be able to assist, and in some areas there may be Councils of Government or similar organizations of local chief executives which can provide a vehicle for coordination of ad hoc planning.

Participants in the initial meeting should include individuals who can authoritatively address problems such as traffic control, EPI, public safety, keeping essential services and industries in operation during an evacuation period, and transportation for hospital patients and those in various types of institutions, prisons, etc.). Thus participants to be considered may include county and municipal chief executives or managers, legal officers, law enforcement officials, fire chiefs, news media representatives, transportation officials (such as local bus company representatives, to provide transportation for those without cars), school officials, public health officials, representative of the local medical society, hospital and nursing home representatives, welfare officials, and representatives of local industry (such as the Chamber of Commerce). Participation by the metropolitan area planning commission, or similar group, is of great importance, as such a group may be a source of planning expertise and detailed data, and may indeed be assigned the primary role in ad hoc planning.

3. Brief Government Officials and Other Leaders, and Assign Responsibilities

Central city head of government, Council of Government, or other appropriate individuals convene initial meeting of local leaders decided upon in step 2.

Brief leaders on the crisis situation, current status of planning, possibility of crisis evacuation, problems that could then confront the jurisdiction, and need for rapid, ad hoc planning for population evacuation.

Outline basic emergency organization in existing local CD plans, and the additional operations that would be needed should the crisis intensify and require population evacuation, such as (a) providing EPI ("where to go, what to do"); (b) traffic control; (c) providing transportation for those without cars and the institutionalized; (d) keeping essential industries and services in operation

during the evacuation period (by key workers commuting from nearby host areas); (e) providing for orderly shutdown of any industrial facilities that would be damaged if left unattended (steel plants, chemical process plants, etc.); and (f) providing protection for those remaining in the risk area in best-available blast protection should an attack occur.

Assign responsibilities for planning in the foregoing basic areas, and designate a chief for planning sub-groups where representatives from a number of different groups—or from a number of jurisdictions—are involved.

Designate an overall planning director, to coordinate and direct the efforts of all involved in ad hoc planning. (One possible candidate would be the director of the metropolitan area planning commission, if there is an effective group of this type serving the entire risk area.)

Provide for liaison and coordination with State authorities (such as State CD Area office, State police).

4. Start Development of Ad Hoc Evacuation Plans

Allocation and Assignment of Evacuees—Use any information made available by the State on host areas "allocated" (set aside) for the risk area. If additional information is available on "assignment" of people from specific parts of the risk area to specific host areas, use this. (Example: "People living in Zip Code areas X and Y go to Host County Z, using U.S. Highway 00.") If this kind of information is not available, develop such an assignment, attempting to equalize traffic loading on routes to the host counties.

Emergency Public Information—Local news media representatives develop materials and procedures for providing official information and advice to risk area residents, should crisis evacuation be implemented. Specific information and instructions would be based on the risk area allocation and assignment outlined above, and the operational planning outlined below. Stress is on developing "hard copy" (newspaper) materials, but plans should also provide for use of radio and TV to supplement more detailed newspaper materials.

Use any initial EPI materials made available by the State for the risk area. If such material is not available, use any example materials made available for other risk areas in the State.

The general approach should be to develop initial EPI materials as soon as possible, and then to refine the materials progressively as planning proceeds. Initial newspaper materials should include: (a) a map of the risk area and of the corresponding host areas, with major traffic routes shown; (b) things evacuees should be prepared to take with them (especially work gloves, tools for developing shelter in host areas, nonperishable food, battery-powered radio, bedding, sanitation and medical supplies, baby supplies, important papers); (c) use of vacation home if available; (d) initial assignment of people living in various parts of the risk area to appropriate routes and host areas; (e) filling fuel tanks of private autos, in case evacuation is implemented; (f) advice for those without cars (such as reporting to nearest elementary school if friends or neighbors cannot provide transportation); (g) outline of nuclear attack effects from standard CD publications; (h) methods of improvising fallout protection in host areas, including illustrations of expedient shelter designs appropriate for the area, also of techniques for fallout upgrading of larger buildings (use illustrations from those provided at the end of Section 6); (i) what to do upon arrival in host areas (such as following local police instructions on parking, reporting to a local school for registration and assignment to temporary lodging).

As planning progresses, the initial EPI materials should be refined. This may include: (a) more detailed assignment of people in various parts of the risk area to specific host counties (as, by Zip Code areas, or elementary school districts); (b) more detailed instructions on routes to follow; (c) more detailed instructions for those without transportation (such as, times to report to schools or other designated locations for bus transportation); (d) designation of essential industries and services (see below), and instructions for key workers and their families to go to specific nearby counties set aside for key workers, from which the key workers can commute into the risk area to keep essential industries and services operating.

Transportation and Movement Planning—Local police, transportation department, city bus company, and others as appropriate develop plans for traffic control and movement. Planning to move the institutionalized (hospital and nursing home inmates, prisoners) will require coordination with

those in charge of institutions, and may present difficult problems in moving patients unable to board buses, or requiring special security arrangements (some prisoners, some psychiatric patients). Planning to provide transportation for those without cars will usually involve use of city and/or school buses; arrangements will also be needed to dispatch buses to pickup points, and from these points to host areas. If pickup points are at schools, school authorities should be asked to organize dispatching operations at their locations, to be operated in coordination with the city bus company or other appropriate organization. The bus company should be asked to take actions to assure availability of drivers.

As transportation and movement plans are developed, materials should be provided to those developing EPI materials, as a basis for updating and refining instructions for the public.

Health-Medical Planning—Local public health officials, hospital representatives, representatives of physicians' groups, and others as appropriate develop plans for reducing hospital censuses as much as possible (as by early discharge of patients as feasible, or suspending elective surgery). Plans should also provide for Emergency Medical Services units (e.g., identification and assignments of staff to remain in the risk area, as well as of other personnel to be dispersed to host areas to serve the needs of the relocated population; and for keeping hospitals in operation on a reduced staffing basis for patients who cannot be moved; staff required would be designated as key workers, to commute from nearby host areas.

Public Safety—Police and fire department officials develop plans to maintain security in the risk area if evacuation is implemented. Police planning includes surveillance of the area to detect fires and unlawful activity, by aerial surveillance as available and by street patrols. (Other police elements would be required for traffic control.) Fires that occur in the risk area can be expected to be larger in size than is normally the case, because of the problem of early detection.

Police and firefighting personnel needed to maintain public safety in the risk area would be key workers, and should commute back into the risk area from nearby host areas. Any police or fire personnel not needed for the risk area should be dispersed to host areas for the general risk area population, and should report to police and fire authorities there, to assist in host area public safety operations.

Essential Industries and Services—Representatives of risk area industries and services that are essential should plan to keep such activities in operation during the evacuation period. Essential activities generally include those needed to support evacuees in host areas (food processing and wholesale distribution, pharmaceutical production and distribution, transportation); communications (telephone); news media (newspapers, radio, TV); energy (petroleum refining and pipeline and wholesale distribution, electric power generation); utilities (water, gas); and the most essential defense production (with emphasis on production of ordnance consumed at a high rate in combat operations—the State CD staff may be able to specify critical defense industries that should be kept in operation during an evacuation period, based on Department of Defense guidance previously provided to the States).

The short time available for ad hoc evacuation planning will probably not permit sophistication in designating essential activities. However, most essential activities can be kept in at least partial operation by supervisory personnel (as when refinery or telephone company supervisors maintain operations during a strike). Thus, *not all* employees of an *essential activity* are "key," and limited operations can often be kept going by only 20 or 30 percent of the normal workforce.

Key workers and their families should go to nearby host areas, from which the key workers can commute into the risk area to maintain operations, as on a two-shift basis.

Orderly Shutdown of Certain Industrial Processes—Certain industries require orderly shutdown over a period of hours or days if severe damage is to be avoided. These include, among others, production of iron, steel, and other basic metals, and various chemical process industries.

Personnel needed for orderly shutdown of such industries would be "key workers." They should go with their families to nearby host areas, from which the key workers would commute to phase the plant down to a safe standby status.

Shelter for Persons Still in the Risk Area at the Time of Attack—Key workers of essential industries and services, police officers and firefighters on

duty, and others still in the risk area would need best-available protection should an attack occur.

In general, most below-ground (basement) space offers better blast (as well as fallout) protection than above-ground areas. Guidance should be developed on identification and use of such space. Home basements provide a modest level of blast protection, and many larger building provide moderate protection. The basements of many larger buildings built before about 1950 provide significant blast protection. However, basements of more modern building of "flat-plate" construction (often characterized by light-panel exteriors, with large windows) should be avoided; they may provide less resistance to blast than a home basement, and upper floors may be pushed into the basement.

Expedient shelters (such as an earth-covered trench or other designs illustrated at the end of Section 6) can provide significant blast protection, as well as excellent fallout protection. Therefore, key workers of essential industries or services should be encouraged to construct expedient shelters close to their facilities, for use should attack warning be received.

Expedient shelter stocking operations in the risk area, using locally available water containers and food, should concentrate on providing stocks for key worker shelters. (See Section 13 of this guide.)

5. Refine and Extend Ad Hoc Planning

Groups involved in ad hoc planning, for the major areas outlined in step 4, continue to develop plans, coordinated by the overall planning director.

Planning will cover all areas outlined in step 4, with special emphasis on (a) designation of essential industries and services to be kept in operation; (b) providing for sheltering key workers (as by planning for construction of expedient shelters providing some blast protection); (c) stocking key worker shelters with water and food; (d) refining plans and arrangements to provide transportation for those in institutions unable to use buses; (e) refining plans and arrangements to provide bus transportation for those without cars, including organizing dispatch operations at schools or other pickup points, and coordination with the bus company; (f) arrangements for orderly shutdown of chemical or other industries where this is essential; and (g) enactment of any ordinances needed to provide authority for operating officials (this may include ordinances on curfews to be imposed if relocation is directed).

As planning proceeds, close *liaison should be maintained with State authorities* (State Police, CD), *and with authorities in host counties.*

As plans are refined, additional details are provided to those developing EPI materials, as a basis for continual updating and refinement of instructions for the public.

Also, all groups or organizations planning for keeping essential activities operating should provide information and instructions to their personnel through their own channels. This would include designation of which are "key" workers, information on which nearby areas are to be used for key worker hosting, and the operations to be kept going. (Example: newspapers to suspend all operations except personnel needed to publish national and international news and EPI.

6. Develop Organizations Needed to Execute Ad Hoc Plans

Develop organizations needed to execute ad hoc evacuation plans (such as school personnel to operate dispatch centers at schools, for those without cars).

7. Activate Ad Hoc Evacuation Plans

If crisis evacuation is implemented, local officials implement ad hoc plans, including dissemination of EPI materials previously prepared..

IT IS RECOMMENDED THAT NO AREA BE EVACUATED WITHOUT FIRST CONSULTING WITH APPROPRIATE STATE OR FEDERAL AUTHORITIES.

SECTION 8

ACTIONS TO IMPROVE EOC OR TO DEVELOP AN EOC FACILITY, AS REQUIRED

OF CRITICAL IMPORTANCE!

NUCLEAR EXPLOSIONS EMIT ELECTROMAGNETIC RADIATION THAT CAN DAMAGE ELECTRONIC AND ELECTRICAL EQUIPMENT CRITICAL TO CIVIL DEFENSE OPERATIONS.

SECTION 2 OF THIS GUIDE DESCRIBES THIS RADIATION—ELECTROMAGNETIC PULSE (EMP)—AND THE STEPS THAT CAN AND SHOULD BE TAKEN TO PROTECT SUSCEPTIBLE EQUIPMENT.

READ SECTION 2 IN CONJUNCTION WITH THIS SECTION. AS YOU DO SO, KEEP IN MIND ALL OF THE ELECTRICAL AND ELECTRONIC EQUIPMENT NEEDED TO PERFORM THE CIVIL DEFENSE READINESS ACTIONS DESCRIBED IN THIS SECTION.

THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines actions which local governments can take during crisis periods to improve the operational capabilities of their Emergency Operating Center (EOC) facility or, if no EOC exists, to develop an EOC facility.

Where an EOC facility exists, some actions may nevertheless be necessary to bring it to a state of full readiness for operations when the EOC staff arrives. Such actions could include, for example, installing additional telephone instruments; ensuring that the fuel tank for the emergency power generator is full; or bringing maps, paper, or other supplies to the EOC area. If the EOC area is used on a day-to-day basis for office space, it may be necessary to rearrange furniture in the EOC area, put maps and displays on the walls, etc.

Where *no* EOC facility exists, governments should take steps to improvise one in the best-protected space available (e.g., city hall or county courthouse basement). Work may be required to improve the fallout protection factor (PF) of such space (e.g., by filling in window wells), and work will normally be required to install communications, secure maps, etc.

In larger jurisdictions, "support" EOCs may also be needed: fallout-protected facilities with staff and communications to provide direction and control for one or more emergency

functions; for example, police, fire, public works engineering, or emergency health. An alternate EOC may also need to be developed as one aspect of assuring local continuity of government (COG) preparations. Actions described in this checklist apply to all types of EOCs—primary, support, and alternate.

The Increased Readiness (IR) actions described in this section would normally be the responsibility of the civil defense (CD) director, acting under directions from the head of local government.

Actions to Improve EOC or to Develop an EOC Facility, as Required

1. Review Status of EOC Facility(ies)

If EOC facility exists, review any actions needed to bring it to full operational readiness when EOC staff arrives (e.g., converting from day-to-day use to emergency operations posture; installing additional communications; providing for *electromagnetic pulse (EMP) protection;* etc.).

If no EOC facility exists, or if existing EOC needs major improvements, identify *best protected* space which could be used as an EOC. Also make plans as required for improving PF; moving in key communications needed (e.g., telephone trunk lines, police or fire radio base station); providing for emergency power; providing food and water; providing for *EMP protection;* etc.

2. Brief Head of Government on EOC Status and Plans for Improvement or Development

CD director briefs head of government (and, if he so directs, other key officials) on status of EOC facility. Outline any actions needed to bring existing EOC to full readiness, and secure approval if required. (This briefing may be combined with briefings described in Section 1 of this guide.)

If no EOC facility exists, or if existing EOC needs major improvements, obtain approval for this work. If necessary, obtain approval of legislative body for expenditure of funds, moving day-to-day offices, etc.

3. Begin Improvement or Development of EOC

Begin all actions approved in 2 above. These may include such actions as: (a) Improving fallout protection (e.g., filling in window wells, providing additional overhead shielding, etc.); (b) installing communications (e.g., telephone trunk lines or TWX; moving police or fire radio base stations—or remote control equipment—to EOC area; etc.); (c) providing emergency power, including tests of equipment, filling fuel tanks, etc.; (d) arranging EOC space into Operations Room, communications area, etc.; (e) installing maps, bulletin boards, or other EOC displays; (f) obtaining sufficient paper, message forms, food, or other EOC supplies; (g) taking actions for *EMP protection..*

Note that these actions can, if appropriate, be carried out in two phases. The first phase could be to place standby orders for later installation of telephone lines, for example, while the second phase would be actual installation.

SECTION 9

ACTIONS TO INCREASE DIRECTION AND CONTROL READINESS

OF CRITICAL IMPORTANCE!

NUCLEAR EXPLOSIONS EMIT ELECTROMAGNETIC RADIATION THAT CAN DAMAGE ELECTRONIC AND ELECTRICAL EQUIPMENT CRITICAL TO CIVIL DEFENSE OPERATIONS.

SECTION 2 OF THIS GUIDE DESCRIBES THIS RADIATION—ELECTROMAGNETIC PULSE (EMP)—AND THE STEPS THAT CAN AND SHOULD BE TAKEN TO PROTECT SUSCEPTIBLE EQUIPMENT.

READ SECTION 2 IN CONJUNCTION WITH THIS SECTION. AS YOU DO SO, KEEP IN MIND ALL OF THE ELECTRICAL AND ELECTRONIC EQUIPMENT NEEDED TO PERFORM THE CIVIL DEFENSE READINESS ACTIONS DESCRIBED IN THIS SECTION.

THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines actions which local governments can take during crisis periods to increase the ability of key officials to provide direction and control from Emergency Operating Center (EOC) facilities. It is assumed that a physical EOC facility either exists or is being improved or developed as necessary. (See Section 8 of this guide, on development of an EOC facility.)

These actions are intended to increase readiness progressively from a review of plans for operation of the EOC, to minimum manning of the EOC, through to maximum operational readiness. Increased Readiness (IR) actions should include planning and manning Shelter Complex Headquarters (SCH), where the number or location of public shelters in the locality makes this intermediate level of control desirable.

The IR actions described in this section would ordinarily be the responsibility of the head of government, coordinated or directed in detail by the civil defense director.

Actions to Increase Direction and Control Readiness

1. Review and Update Plans and Standard Operating Procedures (SOPs) for EOC

If plans or SOPs for EOC operation exist, review and update as necessary (for example, personnel alerting procedures and duty rosters).

If no plans or SOPs for EOC operation exist,

develop them.

Develop procedures for *EMP protection.* See Section 2 of this guide.)

Review procedures for obtaining reports from shelters, emergency services, etc., on shelter communications and readiness, radiological information, emergency operations, etc.

Review essential records required for EOC operations but not located at EOC.

Review State or local declarations of emergency or other emergency documents, for use if situation dictates.

2. Plan for Shelter Complex Headquarters, if Required

If the need for Shelter Complex Headquarters (SCHs) has not already been established by planning for protecting the population in-place, evaluate need for establishing SCHs as a level of control between local EOC and public shelters. This may be indicated if there are more than 20 to 25 public shelters in the jurisdiction or if shelters exist in several separated areas.

As needed, designate SCH directors and staffs by conferences with head of local government and department heads. Trained Shelter Systems Officers may be assigned to serve as SCH directors. Local officials such as police captains or lieutenants or fire department lieutenants may also be designated as Shelter Complex Coordinators. Small staffs may also be provided. Plan to provide communications (if not already available) between the EOC and SCHs, and between SCHs and shelters. Use of citizens' band (CB) radio should be considered. (See Section 10 of this guide, step 1.)

3. Alert EOC Staff

Place all personnel with EOC assignments on 24-hour alert.

Cancel existing or planned leave of government personnel with EOC assignments and recall personnel.

Advise all personnel with EOC assignments to review shelter and survival plans for their families.

Also alert any Shelter Complex Coordinators and staffs designated in step 2 above.

4. Staff EOC 24-hours at Standby Level

Dispatch to EOC minimum number of persons needed to activate EOC, if EOC is not staffed during normal day-to-day operations, and staff EOC on 24-hour basis. Functions of this group should include:

Check operability of all communications systems, including communications to Emergency Broadcast System (EBS) or other channels to communicate to the public, if later situations should so require. Test all communications systems periodically, including emergency power, and take corrective action as necessary. Establish 24-hour communications watch, including NAWAS if available.

Train staff on *EMP protection* procedures; be prepared to implement procedures rapidly upon order (or *automatically* immediately upon attack warning).

Check operability of warning system *without* sounding public warning devices.

Plot high-altitude wind data as received from U.S. Weather Bureau for use in fallout prediction if required.

Inspect EOC supplies (administrative, food, water, medical, bedding). Check availability of State or local emergency documents.

Alert minimum operational staff designees to be prepared to move to EOC on order, and instruct them on appropriate individual actions.

5. Staff EOC 24-hours at Minimum Operational Level

Brief head of government on situation and recommend action to be taken; again review plans for movement of head of government to EOC (if not to be carried out at partial EOC staffing).

Request that head of government instruct one or more of his successors to move to EOC or to preselected locations of relative safety (if not provided for as an SOP action).

Brief key department heads.

Dispatch minimum operational staff to EOC. This should include representatives of *all key local government services* (e.g., police, fire, etc.) and representatives of all necessary support activities, such as communications, disaster analysis staff (including RADEF, etc.). The initial cadre should also include *deputies to department heads if department heads are not included.* Functions of this group should include continuing all activities listed under step 4 above as well as stocking in the EOC essential supplies and records not already pre-positioned there, including State or local declaration of emergency or other emergency documents for possible later use. Continue *EMP protection preparations.*

Alert remainder of EOC staff for full mobilization.

Determine need for EOC exercises or on-the-job training to familiarize partial EOC staff with procedures and duties. Conduct exercises or on-the-job training as necessary.

6. Mobilize Full EOC Staff

Balance of staff assembles at EOC, including head of government, CD director, and department heads. Continue tests and other activities listed under step 4 above, as well as on-the-job training or exercising needed by the full EOC staff.

Important actions by the EOC staff, for maximum local survival in case of attack, includes assuring that:

- Emergency Public Information (EPI) releases from the EOC stress the points on fire prevention and control, and on blast and fallout protective postures, outlined in Section 3 of this guide, at step 3. Also stress EPI releases on actions to keep shelterees' radiation exposure to a *minimum,* in cases where no radiological instruments are available in shelters and no information on the fallout situation is received via the Emergency Broadcast System. (See Section 3, step 3.)

- All EOC staff members (in particular communications personnel) are familiar with *procedures to protect communications and other equipment from EMP,* and are prepared to implement procedures rapidly upon order (or *automatically and immediately upon attack warning*).

- The shelter officer stresses to shelter managers (a) the need for fire prevention and control actions, and for placing shelterees in maximum protection postures (see Section 17, step 3); and (b) the need to establish communications between EOC and SCHs, and between SCHs and shelters (see step 1 of Section 10, and step 4 of Section 17).

- The RADEF officer stresses to Shelter Radiological Monitors the need to be prepared to identify locations within shelters providing best fallout protection, by the use of monitoring instruments. (See step 7, Section 12.)

7. Activate Shelter Complex Headquarters

Staff SCHs with Shelter Complex Directors and any personnel designated in step 2 above. Provide for communications.

SECTION 10

ACTIONS TO INCREASE COMMUNICATIONS READINESS

OF CRITICAL IMPORTANCE!

NUCLEAR EXPLOSIONS EMIT ELECTROMAGNETIC RADIATION THAT CAN DAMAGE ELECTRONIC AND ELECTRICAL EQUIPMENT CRITICAL TO CIVIL DEFENSE OPERATIONS.

SECTION 2 OF THIS GUIDE DESCRIBES THIS RADIATION—ELECTROMAGNETIC PULSE (EMP)—AND THE STEPS THAT CAN AND SHOULD BE TAKEN TO PROTECT SUSCEPTIBLE EQUIPMENT.

READ SECTION 2 IN CONJUNCTION WITH THIS SECTION. AS YOU DO SO, KEEP IN MIND ALL OF THE ELECTRICAL AND ELECTRONIC EQUIPMENT NEEDED TO PERFORM THE CIVIL DEFENSE READINESS ACTIONS DESCRIBED IN THIS SECTION.

THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines actions which local governments can take during crisis periods to improve their communications capability, by preparing for the use of all existing local communications facilities. These actions are intended to increase readiness progressively from a review of communications plans through to maximum operational readiness.

The Increased Readiness (IR) actions described in this section would normally be the responsibility of the civil defense (CD) director, acting under directions from the head of local government. Many or all of these responsibilities might be delegated to a Communications Officer.

Actions to Increase Communications Readiness

1. Review and Update Communications Plans

Review and update as necessary communications plans and Standard Operating Procedures (SOPs), including telephone numbers, radio call signs and frequencies for emergency use. Assure that procedures include actions to *protect communications and other equipment from EMP.*

Review operational area Emergency Broadcast System (EBS) plan with operational area EBS station(s) and Advisory Committee. Request EBS stations test emergency power generators and fill generator fuel tanks. This should be coordinated with the local Emergency Public Information (EPI) and Warning Officers. Advise stations on *electromagnetic pulse (EMP) protection.*

Review and update as necessary line-load control plans with local telephone company, including the telephone numbers and subscribers in the assured service group and the conditions under which line-load control will be activated.

Review and update as necessary plans for emergency installation or activation of additional telephone and teletypewriter service and priority emergency restoration of service with local telephone company, Western Union, and others concerned. Advise companies on *EMP protection.*

Ensure that sufficient telephone instruments and lines are available to permit answering calls from the public. Consider installation of one or more telephones with unlisted numbers for use by key officials.

Review and update as necessary any plans required to relocate or augment local government and other radio communications equipment or for movement of operators and dispatchers to alternate base stations. Check generators, refill fuel tanks, check and replace batteries, etc.

Arrange for use of citizens' band (CB) radios, to provide communications between the Emergency Operating Center (EOC) and Shelter Complex Headquarters (SCH), and between SCHs and shelters. Where CB base stations are to be taken to an SCH, arrange for a 12-volt auto battery to be provided. (See Section 17 of this guide.)

2. Test Existing Communications

Test EOC and other existing emergency communications circuits; take any corrective action necessary. (See Section 9.)

3. Commence Extension of Communications Facilities, As Required

As necessary, commence extension of wire and radio circuits (activate standby telephone/teletypewriter service in EOC, install telephones in shelter areas lacking communications or provide CB radio) for communications from EOC to Shelter Complex Headquarters, and from SCHs to shelters.

4. Alert Communications Personnel

Recommend cancellation of leave of all local government communications operations and maintenance personnel. Alert emergency personnel (EOC telephone clerks and Radio Amateur Civil Emergency Services [RACES] operators) to be ready for emergency duty.

Provide briefings or refresher training on emergency duties and procedures as necessary. Stress actions to *protect communications and other equipment from EMP.*

Advise personnel to review shelter and survival plans for their families.

5. Commence Accelerated Training of Communications Personnel, As Required

If necessary, commence accelerated training of additional communications personnel. (EOC, SCH, shelter telephone clerks, etc.) Stress *EMP protection actions.*

6. Activate Communications Personnel and Emergency Systems

Call off-duty and augmentation communications personnel to duty and place all communications in full emergency readiness, operating all systems in their emergency mode. Be prepared to implement *EMP protection actions* rapidly upon order (or *automatically and immediately upon attack warning.)*

SECTION 11

ACTIONS TO INCREASE WARNING READINESS

This section outlines actions which local governments can take during crisis periods to improve their ability to warn the public of nuclear attack. These actions are intended to increase readiness progressively from a review of warning plans through to maximum operational readiness.

The Increased Readiness (IR) actions described in this section would ordinarily be the responsibility of the civil defense (CD) director, acting under directions from the head of local government. Many or all of these responsibilities might be delegated to the local Warning Officer.

Actions to Increase Warning Readiness

1. Review and Update Warning Plans

Review and update as necessary warning plans and Standard Operating Procedures (SOPs).

If telephone is used for organizational warning, check calling lists and telephone numbers for accuracy.

Review procedures for transmitting warning on broadcast radio and television, background music systems, and private radio systems.

2. Brief Warning Personnel

Alert warning personnel that readiness for emergency operations is being increased and that special attention is to be paid to curcuit(s) over which warning is normally received.

Brief all personnel responsible for receiving and disseminating warning to make certain they are fully informed of their duties and the methods of performing them (police or fire department dispatchers, etc.).

3. Commence Inaudible ("Growl") Siren Testing

Discontinue audible siren testing and begin daily inaudible ("growl") testing. (Caution: Do not permit sirens to reach full sound output.)

Furnish information on siren signals and what they mean to local Emergency Public Information (EPI) officer for appropriate release to the public.

4. Review Warning Plans with Cooperating Agencies

Meet with representatives of local broadcast radio and television stations. Review plans for broadcast of attack warning. Review Emergency Operating Center (EOC) communications links to broadcasters and determine any additional circuits needed. This meeting should be coordinated with officials responsible for communications and emergency public information.

Meet with those responsible for operation of other appropriate public and private communications systems such as public address systems, background music systems, private radio networks, industrial plants, fire departments, military installations, and local offices of Federal agencies. Review or make arrangements for use of their circuits, equipment, and facilities (sirens, horns, whistles, etc.) for alerting and warning. Determine any interconnecting communications links required.

Prepare or update tapes of local warning messages.

5. Develop Neighborhood Radio Watch Organizations If Required

If more efficient and reliable means of alerting the people are not available (e.g., an adequate siren

system), in coordination with the EPI officer establish in each neighborhood, through neighborhood leaders, a group of people large enough so that at least one person would be available to listen to local radio/television stations 24 hours a day and disseminate in the neighborhood any warnings or other emergency messages received, if the radio watch organization was activated.

7. Initiate Public Tests (Other Than Sirens)

With appropriate support from the local EPI officer, conduct system tests and public familiarization with broadcast warning, public address, and background music systems in their emergency modes.

8. Fully Mobilize Local Warning System

Request local radio/television stations commence 24-hour-a-day operation and maintain readiness to broadcast attack warning immediately on notification. Coordinate with communications and public information officials as noted in step 4 above.

Note: Conform to Federal Communications Commission (FCC) emergency requirements, including Emergency Broadcasting System (EBS) plans, as appropriate.

Request background music systems, public address systems,, private radio systems, and other supporting agencies commence 24-hour operation (if not normally in operation 24 hours a day) and maintain readiness for immediate dissemination of attack warning on receipt of notification.

Activate 24-hour-a-day operation of neighborhood radio watch organization.

SECTION 12

ACTIONS TO INCREASE RADIOLOGICAL DEFENSE READINESS

OF CRITICAL IMPORTANCE!

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THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines actions which local governments can take during crisis periods to increase their capability to reduce the number of casualties, and overall personnel exposure from fallout radiation. Radiological defense (RADEF) is an integral part of all the programs and systems which collectively provide for improving survival in case of nuclear attack.

The Increased Readiness (IR) actions described would normally be the responsibility of the civil defense (CD) director, acting under directions from the head of local government. Some or all of these responsibilities may be delegated to the Radiological Defense Officer (RDO).

The CD director and his staff, particularly the RDO, should familiarize themselves with the following publications which describe the RADEF program, the requirements for a viable RADEF program in a jurisdiction, and the operational procedures which involve RADEF.

a. Civil Preparedness Guide (CPG) 2– 1, Radiological Defense Preparedness—A basic document that describes the RADEF program, its components and relationship to other program areas; includes other reference material specific to RADEF that provides guidance on requirements for a total RADEF program

b. CPG 2-6.2, Radiological Defense Manual—Basic Technical Reference for RDOs

c. CPG 2-6.4, Radiation Safety in Shelters—Provides guidance on the use of RADEF instruments in shelters

d. CPG 1-30, Guide for Design and Development of a Local Radiological Defense System

e. Other publications, particularly those pertaining to shelter and the emergency services

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Actions to Increase Radiological Defense Readiness

1. Review and Update Plans and Standard Operating Procedures for Radiological Defense Operations

Review and update as necessary all plans and SOPs involving RADEF operations. These plans include:

- The RADEF Annex or supplement to the community's emergency operations plan
- Plans or procedures for RADEF operations in the Emergency Operating Center (EOC)
- Procedures for RADEF monitoring in shelters
- Plans or procedures for RADEF self-support monitoring for emergency services and vital facilities
- The plan or SOP for reporting stations
- Plans and procedures for radiological decontamination

The RADEF Annex and other appropriate plans should include procedures or SOPs for the following crisis activities to improve RADEF capabilities:

- Allocation of instrument sets to shelters, emergency services and vital facilities, and reporting stations
- Procedures for the distribution of sets in local bulk storage to implement the above allocation
- Procedures for IR training of the additional radiological monitors needed for shelters, emergency services and vital facilities, and reporting stations
- Procedures for activating and operating the reporting station network
- Procedures for receipt and reporting of RADEF information between the reporting stations and the local EOC, and the EOC and the State or State-area EOC
- Procedures for use of local facilities as part of the State aerial radiological monitoring network
- Procedures to *protect communications and equipment from EMP.* (See Section 2 of this guide.)

2. Review RADEF Personnel Assignments and Alerting Procedures

Review assignment rosters and availability of:

- RDO and alternate
- RADEF staff for EOC operations
- Radiological Response Team (RRT)

personnel—RADEF cadre

- Radiological Monitors (RMs) for self-support activities of emergency services and vital facilities.

- RMs for reporting stations

Determine the need for recruitment and training of additional personnel to bring RADEF capabilities to required level.

Determine availability of and review materials for crisis training of RMs for shelters, and additional RMs required for self-support monitoring and for reporting stations.

Review availability of pilots and aerial monitors needed for local portion of State aerial monitoring network.

Review procedures for alerting RADEF personnel.

3. Assemble RADEF Personnel for Briefing and Commence Refresher or Accelerated Training as Necessary

Assemble RADEF personnel and review assignments and procedures. Brief personnel on their emergency assignments and on RADEF plans and SOPs.

Brief RADEF personnel on actions to *protect communications and equipment from EMP.* (See Section 2 of this guide.)

Provide instructions to selected RMs or inspection teams on inspecting reporting stations and RADEF equipment in order to prepare them for operation if required later.

Commence refresher training for all RADEF personnel (RMs, RRTs and EOC RADEF staff).

Commence recruitment and accelerated training of radiological monitors for shelters.

Commence recruitment and accelerated training of additional RMs for self-support monitoring, RMs for reporting stations, RRTs, and EOC RADEF staff.

Stress in all accelerated training actions to *protect communications and equipment from EMP.* (See Section 2 of this guide.)

In accordance with State Aerial Radiological Monitoring plans, recruit and train pilots and aerial radiological monitors as required.

4. Check Readiness of RADEF Equipment and Facilities

Check readiness of the EOC for radiological defense operations.

Check the availability and readiness of EOC RADEF supplies and equipment including (a) RADEF monitoring instruments, data forms, log forms; and (b) RADEF handbooks or reference materials such as CPGs, rosters for personnel shift assignment, communications, and procedures for decontamination of EOC personnel.

Check locations of, availability for distribution, and operability of RADEF instrument sets in local bulk storage.

Activate selected RMs or inspection teams and instruct them to check shelters and reporting stations. This action should be coordinated by CD director and advance information release by Emergency Public Information (EPI) Officer.

RADEF personnel check location, availability, and operability of RADEF monitoring instruments at their locations:

- Check self-support locations and reporting stations for operability and availability of communications to EOC; determine whether fallout protection is adequate (Protection Factor [PF] 100 if possible), and what actions can be taken to increase protection; determine if alternate sites exist with better protection.

- Check availability of vehicles required for mobile monitoring.

- In accordance with State Aerial Radiological Monitoring Plan, check location, availability and operability of aircraft and RADEF instrumentation for aerial monitoring.

5. Correct Deficiencies in RADEF Equipment and Facility Readiness and Distribute Equipment

Request from State any additional RADEF instruments and supplies (such as batteries, handbooks)

required for shelters, self-support, reporting stations, and EOC.

Distribute any RADEF instruments in local bulk storage to shelters, self-support locations, and reporting stations in accordance with plan.

Develop procedures to *protect communications and equipment from EMP.* (See Section 2 of this guide.)

Relocate reporting stations as required to secure better distribution or where feasible to obtain better protection (increase protection by expedient means at all locations if possible.) Relocated reporting stations must have communications capability.

6. Alert RADEF Personnel

Alert all RADEF personnel to be ready for duty if notified. Cancel leave for public employees and request cancellation of vacations for private employees.

Advise RADEF personnel to review shelter and survival plans for their families.

Advise RADEF personnel of additional equipment (flashlight, radio, bedding, foods, medicine, etc.) to be taken with them to their duty station. Also advise of material needed to *protect communications and equipment from EMP* (e.g., aluminum foil, metal screen, metal containers including if necessary galvanized steel garbage cans with tightly fitting lids).

7. Activate RADEF System

Notify RADEF personnel to report to their assigned duty stations, and assure 24-hour staffing.

Upon reporting to their assigned duty stations, RADEF personnel will:

- Report to the officer in charge (if applicable).
- Check and perform operability check on RADEF instruments.
- Check communications.
- Report to EOC when operational.
- Review procedures for monitoring, reporting, etc., including use of monitoring instruments by Shelter RMs to *identify locations within shelters providing best fallout protection,* should attack occur and fallout be deposited in the locality.
- Assure readiness to *protect communications and equipment from EMP* rapidly upon order (or *automatically and immediately upon attack warning).*
- Secure any supplies and equipment still needed (including food, water, material to *protect communications and equipment from EMP,* etc.).

Functions of the RADEF personnel at the EOC will include, in addition to the above noted duties:

- Plot and analyze wind data as each new report is obtained.
- Be prepared to plot and analyze NUDET (nuclear detonation), fallout arrival, radiation level, and damage estimate reports as these are obtained.
- Review intra-EOC procedures.
- Conduct on-the-job training for staff as required.
- Check communications between local EOC and State or State-area EOC and between local EOC and reporting stations, self-support locations, and any shelters with communications, and make simulated RADEF reports, to check and confirm reporting procedures.
- Check advisories pertaining to RADEF and prepare public information data for release by EPI Officer.
- Instruct Shelter RMs to be prepared to *identify locations within shelters providing best fallout protection,* by use of monitoring instruments, should attack occur and fallout be deposited in the locality. (Use of best-protected space can improve survival, as well as reducing the total radiation dose of survivors.)
- Instruct RMs and others to be ready to *protect communications and equipment from EMP rapidly upon order (or automatically and immediately upon attack warning).*

SECTION 13

ACTIONS TO INCREASE INVENTORY OF PUBLIC SHELTER

This section outlines crisis actions to increase the number of public shelter spaces which are available to the public in areas where they are needed.

These actions thus include such steps as accelerated marking or stocking of *public* shelter facilities, as well as possible actions to "upgrade" (improve protection factors) existing facilities, or even to construct expedient public shelter. (*Not* included are actions to encourage citizens to increase fallout protection existing in *homes;* these actions are covered in Section 3 of this guide, Actions for Emergency Public Information. Designs for expedient shelters are provdied at the end of Section 6 of this guide.)

The Increased Readiness (IR) actions described in this section would ordinarily be the responsibility of the civil defense director, acting under directions from the head of local government.

Actions to Increase Inventory of Public Shelter

1. Review and Update Plans for Accelerated Marking and Stocking of Public Shelter

Review and update plans for accelerated marking of shelter facilities intended for use by the public. Signs used may be standard metal "Fallout Shelter" signs, adhesive shelter signs (if available), or locally improvised signs or stencils.

Review plans to request owners of unlicensed shelter to permit marking.

Review and update plans for accelerated public shelter stocking with available supplies, using volunteer, commercial, or government trucks and personnel, and including plans for making use of trapped water. Note that accelerated stocking will require approval of building owners.

Review and update, or develop, plans for accelerated shelter stocking with locally available supplies (from stocks of local retail and wholesale grocers, druggists, etc.), subject to approval of building owners and provided adequate legal authority is available or is anticipated. See Civil Preparedness Guide (CPG) 1-19, Guidance for Development of an Emergency Fallout Shelter Stocking Plan, July 1983. Shelter stocking plans should include provision for allocating radiological instruments to each shelter. This is to be included as part of IR actions to increase Radiological Defense capability. (See Section 12, step 5.)

It is suggested that rather than planning to put food, water containers or other supplies in shelters in *risk areas,* the supplies be placed in available trucks or semi-trailers. This will prevent theft that could occur if supplies were put in shelters and will permit flexibility later in the crisis, either (a) to offload supplies into risk area shelters; or (b) to move supplies to host areas should crisis evacuation be implemented. Also, risk area plans for the option of crisis evacuation should stress crisis stocking of blast-protected space for key workers (see Section 7, ad hoc planning for risk area crisis evacuation), if supplies in vehicles can be moved to shelters designated for key workers of essential industries.

2. Review Plans for Physical Improvement of Existing Buildings and/or for Construction of Expedient Group Shelter

Review any locally developed plans for hasty improvement of existing buildings by owners or by government agencies; or develop such plans if deemed desirable. (Illustrations of "upgrading" techniques for various types of buildings are provided at the end of Section 6 of this guide. Note

that a qualified engineer or builder should advise on how a specific building would need to be strengthened before adding earth overhead or beside the building. Also, a qualified Fallout Shelter Analyst, if available, should advise on which buildings have the best potential for upgrading fallout protection.)

Review any locally developed plans for construction of expedient group shelter by construction contractors, local highway departments, etc., or develop such plans if deemed desirable.

Review plans with local government street or engineering department and/or contractors, if engineering support is required to help owners improve existing buildings, or for construction of expedient shelters. (See Section 14 of this guide, on public works engineering.)

3. Commence Accelerated Shelter Marking

Carry out plans reviewed or developed under step 1 above. Contact owners of unlicensed buildings, to obtain permission for marking.

4. Commence Accelerated Shelter Stocking

Carry out plans reviewed or developed under step 1 above (making sure that adequate legal authority exists for any stocking with retail or wholesale supplies, and that consent of building owners has been obtained).

5. Commence Shelter Upgrading, or Construction of Expedient Group Shelter

Carry out any local plans reviewed or developed under step 2 above. This would normally be done *only* at a very high level of readiness, and would be carried out under the local public works engineering department. (See Section 14 of this guide, on public works engineering.)

Note that individual or family action to improvise *home* fallout protection may occur as the result of disseminating emergency information. See step 5 described in Section 3 of this guide, Actions for Emergency Public Information.

SECTION 14

ACTIONS TO INCREASE PUBLIC WORKS ENGINEERING READINESS

OF CRITICAL IMPORTANCE!

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THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions which may be taken by local government public works engineering departments,* to increase readiness to deal with the engineering problems which could be created by a nuclear attack upon this country.

This section is not intended as a detailed guide for engineering readiness actions to meet a possible nuclear attack. These must be defined by the application of the professional knowledge and skills of the senior officials of local public works engineering departments.

The actions suggested in this section are aimed at increasing readiness progressively from a review of engineering plans to full readiness to carry out the local actions planned.

The Increased Readiness (IR) actions described in this section would be the responsibility of the director of the public works engineering department. He would act under directions from the head of local government and would coordinate as necessary with other department heads and the civil defense (CD) director.

Actions to Increase Public Works Engineering Readiness

1. Review and Update Public Works Engineering (PWE) Plans

Review nuclear attack emergency plans and update as necessary. This must be a cooperative effort involving public and private utilities' representatives, representatives of general contractors such as the chapter officers of the Associated General Contractors of America, representatives of materials suppliers, and representatives of the building trades and other appropriate unions, under the coordination of the senior public works officer of local government.

Because many aspects of PWE, such as power, water, and gas utilities are areawide in operation, it is particularly necessary that emergency PWE plans be coordinated on an interjurisdictional basis.

In addition to the basic PWE emergency operations plan, review mobilization plans, including Plan Bulldozer, heavy and mobile equipment inventories, mobilization and deployment plans, interchange of personnel and equipment plans, accelerated training plans, and local expedient shelter construction or modification plans, and any required utility plant shut-down plans and procedures.

In communities where traffic control devices are the responsibility of the public works engineering department, review plans for positioning emergency signs, cones, barricades, or other traffic control devices needed for movement to shelter or for crisis evacuation. (Coordinate as necessary with police department.)

Following review within the PWE group, these plans should be checked as appropriate with the local chief executive(s), CD director(s), and other department heads—as well as State and Federal highway officials, and others concerned, to ensure that all plans are compatible.

Review vital records needed for continuity of operations or reconstruction of damaged facilities (e.g., sewer or water system maps, etc.), including plans to have such vital records available in the Emergency Operating Center (EOC).

2. Review Personnel Assignments

Review nuclear attack emergency assignments of local government, utility, and general contractor personnel.

Review engineering personnel alerting lists.

Review State employment service and union hiring hall arrangements for obtaining additional personnel as needed.

Include necessary utility and other public works engineering representatives for primary EOC, support EOCs, and Shelter Complex Headquarters as appropriate.

3. Check Readiness of Emergency PWE Equipment and Facilities

Check present availability and state of readiness of heavy equipment, trucks, building supplies and materials, and utility maintenance, repair, and operating supplies and equipment.

Check highway department yards, utility warehouses and yards, general contractors' sites for marshalling and dispatch of heavy equipment to determine fuel, spare parts, radiological monitoring instruments, and other supplies and equipment, including communications, needed for maximum operational readiness.

Check readiness (fallout protection, communications, etc.) of any support EOC(s) needed for direction and control of PWE operations.

4. Correct Deficiencies in Facility and Equipment Readiness

Accelerate maintenance of heavy equipment, trucks, and specialized equipment to ensure maximum availability of all equipment for emer-

** Note: The term "Public Works Engineering," as used in this section, includes not only professional engineers and their activities, but also the personnel and equipment of the construction industry, highway and road departments, public and private utilities, sanitation departments, and similar organizations.*

The term "Public Works Engineering Department" similarly refers to any local government department or group of departments which perform these functions. It would include such units as Service Departments, Highway Departments, Utilities Departments, City Engineers, Parks Department Maintenance and Construction Units, etc.

gency duty.

Ensure that fuel tanks and fuel tankers at selected emergency sites for heavy equipment marshalling are kept full.

Procure and pre-position as required spare parts, supplies, and specialized equipment identified as needed in step 3 above.

Take any measures such as activating standby telephone service, moving available radio equipment, and filling emergency generator fuel tanks required to make PWE emergency headquarters (e.g., support EOCs), heavy equipment depots, and other facilities fully operational.

Develop procedures for *EMP protection.*

Obtain and place any needed operating, maintenance, or repair spare parts, supplies, and equipment needed at utility installations such as water and sewer pumping stations, filtration plants, generating stations, pipe line control and pumping stations, etc., to bring these facilities to maximum readiness for emergency operations. Make maximum efforts to procure and stockpile additional supplies of *water purification chemicals,* for postattack use if required.

In communities where traffic control devices are the responsibility of the PWE department, procure, modify, or pre-position devices for control of movement to shelter or for crisis evacuation, as requested by the police department.
department.

Alert all municipal/county, contractor, and utiity public works engineering personnel. Brief them on their emergency assignments, public works engineering emergency plans, and special instructions. Also brief personnel as necessary on weapons effects and hazards (including EMP), shelter, etc.

Cancel leave for public employees and request cancellation of vacations for private employees, and alert all personnel to be ready for immediate emergency mobilization.

Advise all personnel to review shelter and survival plans for their families.

6. Commence Accelerated Training, As Necessary

As necessary, commence accelerated training of local government, contractor, and utility PWE personnel in special emergency skills—such as using radiation monitoring equipment, or heavy rescue techniques. (See Section 5 of this guide on accelerated training.)

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.)

If needed, commence accelerated training of other able-bodied men to participate in expedient shelter construction or other emergency tasks.

7. Mobilize Emergency PWE Personnel and Equipment

Call all PWE personnel (government, contractor, and utility) to duty and deploy them to their initial nuclear attack emergency assignments in public fallout shelters, or in fallout-protected operating positions in utility plants and stations, or in available fallout protection at selected heavy equipment depots.

Deploy heavy equipment and trucks in accordance with plans.

Initiate, *if appropriate,* emergency shut-down of utilities, in conjunction with local utility authorities.

Install or position any traffic control devices needed for movement to shelter or for crisis evacuation upon request of the police department.

Brief personnel on actions to *protect equipment from EMP* (see Section 2).

Assure readiness to take EMP protection actions rapidly upon order (or *automatically and immediately upon attack warning).*

8. Commence Shelter Upgrading, or Expedient Shelter Construction or Modification

Mobilize the public and private construction capability of the local area, augmenting normally available manpower with other available personnel as necessary and possible. Commence construction of expedient group shelter or "upgrading" (physical improvement) of existing buildings to provide additional shelter spaces in accordance with any local shelter development plan.

SECTION 15

ACTIONS TO INCREASE READINESS FOR FIRE PREVENTION AND CONTROL UNDER NUCLEAR ATTACK CONDITIONS

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THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions which may be taken by local government fire departments, to increase readiness to deal with the fire problems which could be created by a nuclear attack.

This section is not intended as a detailed guide for fire prevention and control readiness actions to meet a possible nuclear attack. What is presented here must be supplemented by the application of the professional knowledge and skills of the senior officers of local fire departments.

The Increased Readiness (IR) actions suggested in this section are aimed at increasing readiness progressively from a review of fire plans to full readiness to carry out the local actions planned.

They would be the responsibility of the fire chief who would act under directions from the head of local government and would coordinate as necessary with other department heads and the civil defense director.

Actions to Increase Readiness for Fire Prevention and Control Under Nuclear Attack Conditions

1. Review and Update Fire Plans

Fire chief and key assistants review and update as necessary nuclear attack emergency plans, including basic operations plan, mobilization and deployment plan, accelerated training plan, inter-jurisdictional mutual aid plans, and plan for emergency guidance to the public.

Review any special plans required for fire protection of public shelters and other vital facilities with building management, industrial security, and military leaders concerned.

Check plans with chief executive, civil defense director, and other department heads to ensure all plans are compatible. Special attention should be given to coordination of plans with the water utility to ensure an adequate supply of water for fire control, as well as for other needs.

Local fire officials meet with gas and electric utility officials and agree on local policy on shut-down of service.

2. Review Personnel Assignments

Review nuclear attack emergency assignments of regular and auxiliary personnel and update as necessary. Include in emergency assignments necessary fire representatives to primary Emergency Operating Center (EOC), support EOCs, and Shelter Complex Headquarters. "Auxiliaries" include any persons who have been given the Support Assistants for Fire Emergency Course or who have been designated by the fire chief to augment regular firefighting forces. (See Section 5 of this guide on accelerated training.)

Make certain that alerting lists for fire personnel are up to date.

3. Check Readiness of Fire Facilities and Equipment

Check readiness (including fallout protection, communications, etc.) of departmental and field (battalion, company) emergency headquarters or support EOCs, including any mobile headquarters units, and determine additional equipment and supplies needed, if any.

Determine readiness of all pieces of fire apparatus, supporting vehicles, and special equipment such as radiological monitoring instruments or hose adapters for mutual-aid use. Check availability of gasoline and other essential supplies.

4. Correct Deficiencies in Equipment and Facility Readiness

Accelerate, as necessary, maintenance of apparatus and supporting equipment, including communications, to ensure maximum availability of all emergency equipment.

Take any measures necessary such as activating standby telephone service, and filling generator fuel tanks at departmental and field emergency headquarters (e.g., support EOCs). Ensure that adequate fuel is available for fire apparatus.

Develop procedures to *protect equipment from EMP.* (See Section 2 of this guide.)

5. Alert Fire Personnel

Alert both on-duty and off-duty fire personnel and fire department auxiliary personnel. Brief all personnel on their emergency assignments, the department's nuclear attack emergency plans, and special instructions. Also brief personnel as necessary on weapons effects and hazards (including EMP), shelter, etc.

Cancel leave for full-time personnel and direct volunteers and emergency augmentation (auxiliary) personnel to stand by for duty.

Advise all personnel to review shelter and survival plans for their families.

6. Commence Accelerated Training as Necessary

As necessary, commence accelerated training of regular personnel in special emergency skills such as using radiation monitoring equipment, and of any additional auxiliary personnel required. (See Section 5 on accelerated training.)

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.)

7. Commence Public Advice on Fire Prevention and Suppression Measures

Begin instructing the public, through news media and other means on actions to reduce the probability of fires caused by the thermal (heat) effects of a nuclear explosion. Actions may include closing venetian or other blinds, or covering windows with whitewash, mud, or aluminum foil to reduce ignitions from the thermal pulse; action to eliminate trash, leaves, or other potential ignition points; and householder actions relating to turning off appliances. Include instructions on extinguishing small fires. As agreed with local utilities in step 1 above, give advice on shut-down of gas, electric, and water service. (See Section 3 of this guide, on emergency public information. Coordinate all actions with local Emergency Public Information officer.)

Coordinate with Public Service, Streets, Sanitation or other appropriate department to ensure trash is promptly collected.

8. Mobilize Fire Personnel

Call all regular and auxiliary personnel to duty, and deploy them to their initial nuclear attack emergency assignments, including any planned support to law enforcement personnel in assisting movement to shelter.

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.) Assure readiness to take EMP protection actions rapidly upon order (or *automatically and immediately upon attack warning).*

9. Urge Citizens to Make Final Fire Prevention Preparations

Through the local EPI officer, urge all citizens to make final fire prevention preparations outlined in step 7 above.

SECTION 16

ACTIONS TO INCREASE READINESS FOR LAW ENFORCEMENT

OF CRITICAL IMPORTANCE!

NUCLEAR EXPLOSIONS EMIT ELECTROMAGNETIC RADIATION THAT CAN DAMAGE ELECTRONIC AND ELECTRICAL EQUIPMENT CRITICAL TO CIVIL DEFENSE OPERATIONS.

SECTION 2 OF THIS GUIDE DESCRIBES THIS RADIATION—ELECTRO-MAGNETIC PULSE (EMP)—AND THE STEPS THAT CAN AND SHOULD BE TAKEN TO PROTECT SUSCEPTIBLE EQUIPMENT.

READ SECTION 2 IN CONJUNCTION WITH THIS SECTION. AS YOU DO SO, KEEP IN MIND ALL OF THE ELECTRICAL AND ELECTRONIC EQUIP-MENT NEEDED TO PERFORM THE CIVIL DEFENSE READINESS ACTIONS DESCRIBED IN THIS SECTION.

THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions which may be taken by local government law enforcement agencies to increase their readiness to deal with the law and order problems which could be created by a nuclear attack on this country.

This section is not intended as a detailed guide for law enforcement readiness actions to meet a possible nuclear attack. What is presented here must be supplemented by the application of the professional knowledge and skills of the senior officers of local law enforcement agencies.

The Increased Readiness (IR) actions suggested in this section are aimed at increasing readiness progressively from a review of law enforcement plans to full readiness to carry out the local actions planned. They would be the responsibility of the sheriff or chief of police who would act under directions from the head of local government and would coordinate as necessary with other department heads and the civil defense (CD) director.

Actions to Increase Law Enforcement Readiness Under Nuclear Attack Conditions

1. Review and Update Police Plans

Chief of Police or Sheriff and subordinate commanders review and update as necessary nuclear attack emergency plans, including basic operations plan, mobilization plan, movement to shelter plan (including use of tow trucks, as well as signs,

barricades, cones and other traffic regulating and assistance devices), plus any local plans for assistance in movement control by fire department or other local government personnel, interjurisdictional mutual aid plans, and accelerated emergency training plan.

Check plans with chief executive, CD director, and other department heads to ensure all plans are compatible.

Review plans for emergency care of prisoners, including fallout shelter.

Review any plans required for protection of vital facilities with the industrial security and military leaders concerned.

2. Review Personnel Assignments

Review nuclear attack emergency assignments of regular and auxiliary personnel, and update as necessary. Include necessary law enforcement representatives for primary Emergency Operating Center (EOC), support EOCs, and Shelter Complex Headquarters.

Make certain current telephone numbers are available if alerting and mobilization is by chain calling.

3. Check Readiness of Law Enforcement Facilities, Equipment, and Supplies

Check readiness (including fallout protection, communications, etc.) of departmental and field (district, precinct) emergency headquarters or support EOCs, including any mobile headquarters units, and determine additional equipment and supplies needed, if any.

Determine readiness of law enforcement emergency vehicles, communications, and special equipment such as crowd control devices and radiological monitoring instruments. Check availability of gasoline and other essential supplies.

4. Correct Deficiencies in Facility and Equipment Readiness

Accelerate maintenance of vehicles, communications equipment, etc., to ensure maximum availability of all emergency equipment.

Take any measures necessary such as activating standby telephone service and filling generator fuel tanks at departmental and field emergency headquarters (e.g., support EOCs). Ensure that adequate fuel and other essential supplies are available.

Develop procedures to *protect communications and equipment from electromagnetic pulse (EMP).* (See Section 2 of this guide.)

5. Alert Law Enforcement Personnel

Alert both on-duty and off-duty law enforcement personnel and auxiliary personnel. Brief them on their emergency assignments, the department's nuclear attack emergency plans, and special instructions. Also brief personnel as necessary on weapons effects and hazards (including EMP), shelter, etc.

Cancel leave for regular personnel and direct auxiliary personnel to stand by for duty.

Advise all personnel to review shelter and survival plans for their families.

6. Commence Accelerated Training as Necessary

As necessary, commence accelerated training of regular personnel in special emergency skills such as using radiation monitoring equipment, and of any additional auxiliary personnel required. (See Section 5 on accelerated training.)

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.)

7. Pre-position Traffic Control Devices as Required

Pre-position traffic control devices as required to facilitate movement to shelter or crisis evacuation (e.g., install roadside signs, and pre-position barricades, cones, and similar traffic-channelling devices along movement routes, as needed). This work should be requested of the public works engineering department in communities where they are responsible for traffic control devices.

It is recommended that no area be evacuated without first consulting with State or Federal authorities.

8. Mobilize Law Enforcement Personnel

Call all regular and auxiliary personnel to duty,

deploy them to their initial nuclear attack emergency assignments to assist the population in moving to shelter or from risk areas, and to maintain law and order in public shelters.

Deploy emergency vehicles and equipment fully or partially, in accordance with plans.

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.) Assure readiness to take EMP protection actions rapidly upon order (or *automatically and immediately upon attack warning.*).

SECTION 17

ACTIONS TO INCREASE OPERATIONAL READINESS OF PUBLIC SHELTER

OF CRITICAL IMPORTANCE!

NUCLEAR EXPLOSIONS EMIT ELECTROMAGNETIC RADIATION THAT CAN DAMAGE ELECTRONIC AND ELECTRICAL EQUIPMENT CRITICAL TO CIVIL DEFENSE OPERATIONS.

SECTION 2 OF THIS GUIDE DESCRIBES THIS RADIATION—ELECTRO-MAGNETIC PULSE (EMP)—AND THE STEPS THAT CAN AND SHOULD BE TAKEN TO PROTECT SUSCEPTIBLE EQUIPMENT.

READ SECTION 2 IN CONJUNCTION WITH THIS SECTION. AS YOU DO SO, KEEP IN MIND ALL OF THE ELECTRICAL AND ELECTRONIC EQUIPMENT NEEDED TO PERFORM THE CIVIL DEFENSE READINESS ACTIONS DESCRIBED IN THIS SECTION.

THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions which local governments can take to increase the operational readiness of public shelters.

The Increased Readiness (IR) actions described in this section would normally be the responsibility of the civil defense (CD) director, acting under directions from the head of local government. Some or all of these responsibilities may be delegated to the Shelter Systems Officer.

Actions to Increase Operational Readiness of Public Shelter

1. Review Plans for Operation of Public Shelters

Review plans for making public shelters ready for occupancy and for operation of shelter during a CD emergency.

2. Review Plans for Activating Shelter Management Staffs

Review rosters, assignments, and alerting procedures for Shelter Managers (SMs) and supporting staffs, and update if necessary. Determine availability of SMs for duty if required, and determine deficit of SMs. (This deficit will establish part of the requirement for accelerated CD training; see Section 5 of this guide).

3. Assemble Shelter Management Staffs for Briefing and Commence Refresher and Accelerated Training

Assemble SM personnel to review assignments and procedures. Brief them on their emergency assignments, shelter management plans, and special instructions (including instructions for selected SMs or inspection teams to inspect public shelter areas and supplies and prepare shelters for occupancy should inspection be required later).

Issue to each SM a copy of Civil Preparedness Guide (CPG) 2-6.4, Radiation Safety in Shelters, September 1983 and CPG 2-20, Life Support Operations in Shelters, January 1988 (reproduce copies locally as required).

Brief SMs on actions to *protect communications and other equipment from electromagnetic pulse (EMP).* (See Section 2 of this guide.)

Commence refresher training, emphasizing the following:

a. The critical need, in *all risk areas* (any area which could suffer blast and heat effects of nuclear weapons), for SMs to take the following actions, which have great lifesaving potential:

- Take fire *prevention actions,* such as covering windows with whitewash, mud, or aluminum foil to reduce ignitions from the thermal pulse and closing all window blinds or curtains in buildings designated as public shelters. These actions should be taken if possible *before* Attack Warning and the arrival of shelter occupants—otherwise, promptly upon shelter occupancy.

- Assume control of shelter occupants as they arrive. (SMs should thus, if possible, be on duty at shelters before Attack Warning).

- Place shelter occupants in *maximum blast-protection posture* promptly upon arrival: Sitting back-to-back about two feet from outer walls of basement, or near columns, and *not* beneath unsupported parts of basement ceilings. Where it is necessary to occupy upper floors, shelterees should lie down in the central part of the building, out of line of flying glass and debris, and hold onto each other.

- Brief shelter occupants on the urgency, should a nuclear detonation occur, of (1) rapidly *checking all parts of the building for smouldering furniture or other ignitions;* and (2) throwing smouldering furniture out windows, or otherwise preventing fires which could force occupants to leave.

b. The urgent need in *all* areas for SMs to take the following actions, which have great potential for lifesaving and for reducing shelterees' total exposure to radiation:

- Place shelter occupants in *maximum fallout-protection posture* promptly upon arrival: In risk areas, this will result to a large degree from placing shelterees in the blast-protection posture outlined above. In low-risk areas, SMs should place as many people as possible in basements; where it is necessary to occupy upper floors, shelterees should be placed in central parts of buildings.

- Should an attack occur and fallout be deposited in the locality, SMs should *use available radiological monitoring instruments to identify locations within shelters providing the best fallout protection.* If a Shelter Radiological Monitor is present, he should identify the best protected parts of the shelter; otherwise the SM is responsible for use of instruments, if available, for this purpose.

- SMs should assure maximum use of best-protected space. This may involve *significant crowding of shelterees in best-protected areas* and, depending upon the weather, may result in high heat and humidity, which can in turn result in dangerous heat exhaustion. SMs should take actions to improve ventilation such as opening windows to improve natural ventilation, or improvising fans to move hot air out of the shelter area. (See instructions on constructing directional fans at the end of Section 6 of this guide.) If heat and humidity problems develop, SMs must move some shelterees to less well protected parts of the shelter, if possible rotating shelter occupants to and from such areas. To the maximum extent possible, however, children and women of childbearing age should be kept in the best-protected areas, to reduce adverse effects of radiation exposure.

c. The need for SMs to take the following actions to help keep shelterees' radiation exposure to a minimum, *in situations where there are no radiological monitoring instruments in the shelter* or any other source of information on the fallout radiation hazard (e.g., no communications with the EOC, or fallout information from the Emergency Broadcast System):

- Keep shelter occupants, insofar as possible, in the maximum fallout-protection posture described in b. above for four or five days. (By that time, fallout intensities will have decreased to under one percent of the levels soon after weapons detonated.)

- Have one person look outdoors. If a layer of dust can be seen on trees or the ground, or sand-like particles on cars or sidewalks, there was considerable fallout and *there is probably still a moderate to substantial radiation hazard.* The person who looked outdoors should return to the shelter area and everyone should remain in shelter for several more days while radiation levels continue to decrease. After that time, send someone outside to seek information as described below. (If there appears to be quite a thick layer of particles outdoors, there may be a very substantial hazard, and all should remain in shelter as long as they can.)

- If no fallout is visible, there is probably only a low radiation hazard in the area—quite possibly none at all. In that case, one individual should go out to seek information. He should first see if there are people in nearby public shelters or in home basements; possibly they have been able to hear broadcasts with information on the fallout situation and what to do (for example, how much longer to stay in shelter areas).

- If there are no people nearby with information, then the volunteer should go (by car if possible) to the city or county Emergency Operating Center (EOC) to secure information on the fallout situation and advice on what to do. *[Change the foregoing as appropriate to apply to the local situation. For example: "...then go (by car if possible) to the Brown County Emergency Operating Center. This is in Room B103 in the basement of the Brown County Courthouse, at 6th and Elm Streets in Brownville. Brown County officials there should have information on...."]* This advice might be to return to shelter for several more days, or it might be that it is now all right to leave shelters, because there was little fallout in the area.

- Whoever goes outside to get information on the fallout situation should assume until told otherwise that there *may* be some fallout radiation hazard. This means that he should move rapidly and be outdoors for *as short a time as possible.* But even if it takes an hour or two to contact local officials, radiation exposure will probably be limited. In addition, before entering the shelter area again, he should brush off any fallout particles from his clothing that he might have picked up while outside.

Commence recruitment and accelerated training of additional SMs determined to be needed in step 2 above.

4. Inspect Public Shelter Areas and Prepare for Occupancy

Shelter management staffs, with consent of building owners, check location and condition of food and other shelter stocks, including availability of water and location and (in cooperation with assigned radiological monitor) condition of RADEF instruments. They should also check communications to EOC or Shelter Complex Headquarters.

Report on status of shelter and take corrective action (providing water, replacing inoperative dry cells in RADEF instruments, etc.). When communications do not already exist, arrange for Citizens' Band (CB) radios. If a CB base station is to be taken to the shelter, arrange for a 12-volt auto battery to be provided. (See Section 10 of this guide.)

Seek assistance of building owner or others to take fire prevention actions noted in step 3.a above (close window blinds, cover windows).

Review status of individual facility shelter-management plans or Standard Operating Procedures (SOPs) and develop or update as necessary,

including provision of staffs needed to assist SMs.

5. Alert Shelter Management Staffs for Duty

Alert SMs and supporting staffs (if any) to be ready for duty if notified, using alerting procedures or SOPs.

Advise SM personnel to review shelter and survival plans for their families.

6. Man Public Shelters on 24-hour Basis

Notify shelter staffs to report to assigned public shelter areas and ensure 24-hour staffing by some or all of the assigned personnel. (This would normally occur only at a very high level or readiness.)

Brief SMs and supporting shelter staffs on actions to *protect communications and other equipment from EMP.* (See Section 2 of this guide.) Assure readiness to take EMP protection actions rapidly upon order (or *automatically and immediately upon attack warning*).

Continue work, as required, to prepare shelters for occupancy, including any work needed on shelter management plans or SOPs for individual shelter facilities.

SECTION 18

ACTIONS TO INCREASE EMERGENCY WELFARE READINESS

This section outlines crisis actions which may be taken by local government departments of public welfare to increase readiness to deal with the emergency welfare problems which could be created by a nuclear attack upon this country.

This section is not intended as a detailed guide. What is presented here must be supplemented by the application of the professional knowledge and skills of senior public welfare (or human services) officials of local governments—with assistance from key officials of private or voluntary welfare organizations.

The Increased Readiness (IR) actions suggested in this section are aimed at increasing readiness progressively from a review of emergency welfare plans to full readiness to carry out the local actions planned. They would be the responsibility of the director of the local Department of Public Welfare (or Human Services) with support, in many cases, from the heads of local private or voluntary welfare organizations. He would act under directions from the head of local government and would coordinate as necessary with other department heads and the civil defense director.

Actions to Increase Emergency Welfare Readiness

1. Review and Update Emergency Welfare Plans

Local Director of Public Welfare (or Human Services) and heads of private welfare agencies review and update as necessary emergency welfare plans, including basic operations plan (including establishment of welfare centers); mobilization plan; emergency lodging, feeding, clothing, registration and inquiry, and social service plans; accelerated training plan; and interagency and interjurisdictional mutual-aid plans.

Check plans with chief executive(s), civil defense director(s), and other department heads to ensure all plans are compatible, including any coordination needed between counties and municipalities.

Ensure that all public and private welfare institutions have up-to-date emergency plans to provide fallout protection and support care for their populations, as well as potential evacuees. (See Section 6.)

2. Review Personnel Assignments

Review emergency assignments of all welfare personnel, both lay and professional, paid and volunteer, and public and private. In addition to appropriate assignments to the staffs of public fallout shelters and other facilities, include emergency welfare advisors/representatives for Primary Emergency Operating Center (EOC), support EOCs, Shelter Complex Headquarters, and host area reception and care centers, as appropriate.

Make certain that current telephone numbers are available if alerting and mobilization is by chain calling.

Determine requirements for any additional volunteer emergency welfare workers and include these in accelerated training plans. (See Section 5, on accelerated training.)

3. Check Readiness of Emergency Welfare Facilities and Equipment

Check readiness of public and private welfare institutions to provide fallout protection and supportive care for their population; e.g., availability of fallout protection, food and water for 14 days, radiological monitoring instruments, etc.

Check availability and condition of other emergency welfare equipment and supplies required to carry out approved emergency welfare plans.

Determine additional equipment and supplies needed, if any.

4. Correct Deficiencies in Facility and Equipment Readiness

Accelerate maintenance of all types of equipment needed for emergency operations of welfare institutions, to ensure maximum availability.

Commence procurement of any equipment or supplies for which shortages were identified in step 3 above.

5. Alert Emergency Welfare Personnel

Alert all emergency welfare personnel. Brief them on their emergency assignments, emergency welfare plans, and special instructions as applicable. Also brief personnel as necessary on weapons effects and hazards, shelter, etc.

Request employers to cancel vacation of paid welfare personnel and ask voluntary emergency welfare workers to stand by for call to duty.

Advise all personnel to review shelter and survival plans for their families.

6. Commence Accelerated Training, as Necessary

Conduct conferences for social workers and other professional staff, stressing those aspects of emergency welfare services which differ from normal welfare practices, such as mass care instead of individual case work and psychological first aid for disaster victims.

Commence accelerated training of additional volunteer emergency welfare workers, if any, determined to be required in step 2 above.

7. Mobilize Emergency Welfare Personnel

Call all full-time, volunteer, and other emergency welfare personnel to duty and deploy them to their initial nuclear attack assignments.

Move all institutionalized personnel to fallout-protected areas of the institution, releasing as appropriate any who could be better cared for in public fallout shelters.

SECTION 19

ACTIONS TO INCREASE HEALTH-MEDICAL READINESS

OF CRITICAL IMPORTANCE!

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THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions which may be taken by local government health depart-ments—supported by organizations of physicians and other health professionals—to increase readiness to deal with the health and medical problems which could be created by a nuclear attack upon this country.

This section is not intended as a detailed guide for health-medical readiness actions to meet a possible nuclear attack. What is presented here must be supplemented by the application of the professional knowledge and skills of local public health officers, Emer-gency Medical Services (EMS) personnel and medical professionals.

The Increased Readiness (IR) actions suggested in this section are aimed at increasing readiness progressively from a review of health-medical emergency plans to full readiness to carry out the local actions planned. They would be the responsibility of the local public health officer—supported by key members of organizations of physicians (for example, president of the county medical society) and of other health professionals. The public health officer would act under directions from the head of local government and would coordinate as necessary with other department heads and the civil defense director.

Actions to Increase Health-Medical Readiness

1. Review and Update Emergency Health Service Plans

Local public health officer, president of the local medical society, and representatives of local hospitals, pharmacies, and medical and allied health personnel review and update as necessary emergency health-medical plans. These may include basic health-medical emergency operations plan, mobilization plan, accelerated emergency training plan, and interjurisdictional mutual-aid plans.

Ensure that each general hospital, special hospital (for example, neuropsychiatric, tuberculosis), clinic, and nursing home has an up-to-date disaster plan, including both casualty care and in-patient fallout protection.

Check plans with chief executive(s), civil defense (CD) director, and other department heads concerned to ensure all plans are compatible, and that civil defense plans provide for essential nonmedical support to health services during emergencies. Note that health-medical plans will frequently be countywide as a result of normal professional organization and practice in medicine. Where a countywide coordinating agency for civil defense does not exist, coordination of health-medical plans with each jurisdiction may be necessary.

2. Review Personnel Assignments

Review nuclear attack emergency assignments of all medical, allied health, and ancillary personnel to ensure that all have current assignments.

In providing the best available health-medical staffing for public shelters and medical installations, do not overlook the skilled manpower available among retired medical and allied health personnel, veterinarians, former military medical enlisted personnel, and American Red Cross and other home nursing and first-aid trainees, as well as students in medical, nursing, pharmacy, X-ray, and laboratory schools which may be in the area.

Determine requirements for any additional Medical Self-Help, home nursing, and first aid graduates, and include these in accelerated training plans. (See Section 5 of this guide, on accelerated training.)

Determine mobilization requirements for non-professional manpower needed to support the emergency health services (e.g., additional clerical, housekeeping, and maintenance personnel) and submit requirements to CD director and/or State employment service local office.

3. Check Readiness of Health-Medical Facilities and Equipment

Check the availability and operational readiness of facilities, equipment, and supplies for emergency health-medical services, including medical supplies that may be in public fallout shelters, and sanitation and vector control supplies and equipment, as well as mobile equipment.

Check the availability and operational readiness of special equipment such as radiological monitoring instruments and food and water for hospital in-patients' use during shelter period.

Check readiness (fallout protection, communications, etc.) of any support Emergency Operating Center(s) (EOCs) needed for direction and control of Emergency Health Service operations (for example, in a fallout-protected area in a local hospital).

4. Correct Deficiencies in Facility and Equipment Readiness

Develop procedures to *protect equipment from electromagnetic pulse (EMP).* (See Section 2 of this guide.)

Accelerate maintenance of all types of equipment needed for health-medical emergency operations, to ensure maximum availability.

Commence procurement of any equipment or supplies for which shortages were identified in step 3 above.

Increase bed capacity of hospitals as appropriate.

5. Alert Health, Medical, and EMS Personnel

Alert both on-duty and off-duty health and medical personnel and emergency supporting personnel. Brief them on their emergency assignments, the nuclear attack emergency plan of the facility to which they are assigned, and any special instructions. Also brief personnel as necessary on

weapons effects and hazards (including EMP), shelter, etc.

Request employers of health-medical personnel to cancel vacations for their employees and request self-employed or retired professionals to cancel travel and remain in the area. Direct emergency supporting personnel to stand by for call to duty.

Advise all personnel to review shelter and survival plans for their families.

6. Commence Accelerated Training, as Necessary

Conduct professional conferences for physicians, nurses, and others as appropriate on disaster health-medical care, stressing such departures from normal practice as sorting of patients (triage) and allocation of medical care on the basis of probable results vs. efforts required. Also review the effects of nuclear radiation and treatment of radiation casualties.

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.)

Commence accelerated training of home nursing and first aid personnel determined to be required in step 2 above.

Obtain nonprofessional staffing needed to support the emergency health services (for example, additional clerical, housekeeping, and maintenance personnel) from the local CD director and/or local office of the State employment service, and commence training them in their emergency duties.

7. Reduce Non-emergency Patient Load

Urge attending physicians to suspend elective surgery and noncritical diagnostic studies for duration of the crisis.

Urge attending physicians to evaluate all patients, releasing them from hospital and/or active care as rapidly as possible, consistent with safety.

8. Conduct Public Sanitation Campaign

In conjunction with the local Emergency Public Information (EPI) officer, conduct a sanitation campaign—urging all citizens to eliminate unsanitary conditions and assist sanitarians in destroying disease vectors and their breeding and feeding areas.

Similarly, instruct the public in emergency sanitation requirements and procedures such as safe disposal of human and kitchen wastes if normal sewer and garbage collection services should be disrupted. Coordinate all actions relating to the public with the local EPI officer. (See Section 3 of this guide on EPI.)

9. Mobilize Health, Medical, and EMS Personnel

Call all regular and emergency augmentation health-medical personnel to duty and deploy them to their initial nuclear attack emergency assignments.

Brief personnel on actions to *protect equipment from EMP.* (See Section 2 of this guide.) Assure readiness to take EMP protection actions rapidly upon order (or *automatically and immediately upon attack warning*).

Move all hospital in-patients to fallout-protected areas of the hospital, releasing as appropriate those not critically ill to go to fallout shelters with their families.

SECTION 20

ACTIONS TO INCREASE READINESS OF LOCAL SCHOOLS

This section outlines crisis actions which local school authorities and local governments can take to increase schools' readiness for nuclear attack and may also serve as a point of departure for Increased Readiness (IR) planning by colleges and universities. The actions outlined are of a general nature, and would be the responsibility of the school authorities, acting in close coordination with the head of local government and the civil defense (CD) director.

Actions to Increase Readiness of Local Schools

1. Review and Update School Emergency or Disaster Plans

School authorities (e.g., chairman and members of school board, superintendent of schools, etc.) attend briefings and meetings of key local officials, to be briefed on the situation and on local government IR actions under way or under consideration. (See Section 1 of this guide.)

School authorities review, update, or develop school system emergency or disaster plans. Particular attention should be given to local shelter-use plans and their impact on such basic policy issues as whether or when to send children home, plans for use of some school buildings as fallout shelter, etc.

2. Brief Key School System Officials

School authorities brief key officials (e.g., principal or assistant principal from each school) on the situation and indicate actions to be taken (for example, review individual school emergency plans, update plans and emergency assignments of staff members as required, brief faculty, determine needs for shelter or other supplies, etc.).

3. Brief School Staffs and Increase School Readiness

School principals brief their staffs and indicate actions to be taken.

Review emergency assignments of all school staff members.

Determine need for accelerated training in CD skills (such as radiological monitoring or shelter management) for school staff members, for service in schools planned for use as public shelters or in other public shelters in the locality. Commence accelerated training. (See Section 5, on accelerated training.)

For later use if indicated, prepare materials for briefing students and/or materials for students to take home, on school emergency plans.

Where faculty members are qualified to instruct on CD and survival subjects, consider scheduling CD instruction for students, also first aid, etc. Check availability of faculty to *teach CD classes for adults, as local demand develops.* (See Section 5 of this guide, on accelerated training.)

Where schools are planned to be used as fallout shelters or as reception and care centers for evacuees, cooperate with local CD director and radiological defense and shelter management staffs in preparing shelter areas for occupancy. (See Sections 6, 12, and 17 of this guide.)

4. Brief Students on School Emergency Plans and Continue Emergency Preparations

Brief all students on emergency plans for their school. Issue to students to take home any written materials on school plans. School authorities arrange for concurrent issuance of appropriate news release. (Coordinate with local Emergency Public Information Officer; see Section 3 of this guide.)

If deemed appropriate, conduct shelter drill (or school release drill) for staff and students.

Commence CD courses for students, as previously planned.

Cooperate in any local government actions for accelerated marking or stocking of school buildings planned for use as fallout shelters, or for preparing schools for use in reception and care of evacuees. (See Section 6 of this guide.)

5. Suspend Classes

Suspend classes so school students will be at home and school staffs can devote full attention to emergency duties.

SECTION 21

ACTIONS FOR INDUSTRY INCREASED READINESS

OF CRITICAL IMPORTANCE!

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THEN TAKE ALL APPROPRIATE EMP PROTECTION MEASURES DESCRIBED.

This section outlines crisis actions that local governments can take to encourage and assist the managers of industrial and commercial facilities to improve their capability, consistent with community civil defense (CD) plans and policies, to save lives and minimize damage in and around their facilities during a CD emergency.

This section is not intended as a detailed guide for all the Increased Readiness (IR) actions to be taken within the industrial and commercial facilities themselves. The CD preparations recommended for industrial and commercial facilities are described in FEMA publication 141, Disaster Planning Guide for Business and Industry, August 1987. Responsibility for defining the specific actions to be taken for the protection of life and property within the facilities is a function inherent in ownership or the management that represents the ownership. Emergency shut-down procedures, for example, often involve considerations peculiar to the materials, processes, or facilities involved. These procedures should be specified in a company plan developed within the larger framework of the community CD plan.

The management of each industrial facility should develop detailed IR plans and standing operating procedures (SOPs) adapted to the particular needs and requirements of the facility. These plans and procedures should specify who does what, where, and when at

the facility to improve the company's civil defense readiness during any period when the local government is taking IR actions—with specific actions based on the numbered IR actions set forth on the following pages.

The local CD director or industrial CD coordinator should, on the basis of prior liaison, be aware of the general nature of company plans and preparations for coping with a CD emergency—especially in facilities that employ a significant proportion of the workers in the community or provide a significant proportion of the public fallout shelter spaces in the area surrounding the facility. IR actions with respect to industrial and commercial facilities should be based on such prior coordination. For example, if company preparations include an emergency control center within the facility, the adequacy of communications between the company control center and the local government's Emergency Operating Center (EOC) is an important factor in both industry and government readiness. Similarly, when company personnel, equipment, facilities, and resources are included in the community CD planning for fire prevention and control, maintenance of law and order, traffic control, communications, radiological monitoring or decontamination, shelter management or other emergency operating function, the IR actions initiated by local governments should reflect prior coordination with the facility managers who control the personnel, equipment, facilities, or other resources involved.

Even in those instances where (because of location of facilities or other reasons) company CD preparations are not integrated with the basic community CD program, the company CD coordinator should be kept advised of the general nature of IR actions taken by the local government, and should be urged to take similar steps to improve company preparedness for saving lives in the event of an attack.

The IR actions described in this section would be the responsibility of local officials such as the CD director or the industrial CD coordinator. Some of them can be expected to be accomplished most effectively and expeditiously if performed by other officials of local government; for example, by the chief of police, the fire chief, etc., who are normally concerned with the substance of the IR action involved. CD directors in communities that have a large number of industrial facilities at which IR actions must be encouraged should consider using industrial mutual-aid associations, industry advisory groups, or other industrial or trade organizations in the community to assist in making the necessary briefings, reviews, checks, or exchanges of information required by these IR actions.

Actions for Industry
Increased Readiness

1. Brief Industry Executives and Review Emergency or Disaster Plans

Executives of major industrial and commercial establishments should be invited to attend meetings of key local officials, for briefings on the situation and on local government IR actions under way or under consideration (See Section 1 of this guide.) Provides copies of Section 2, on *electromagnetic pulse (EMP) and actions to protect communications and other equipment from EMP.*

CD director or local industrial CD coordinator recommends review and as necessary updating or development of industry emergency or disaster plans within the community. Particular attention should be given to local shelter-use plans (based

on in-place protection planning) as they affect employees. Stress *critical importance of EMP protection.* Urge executives to *appoint a company EMP Protection Coordinator,* to work with the local government EMP Protection Coordinator and begin actions to protect equipment from EMP.

2. Brief Key Officials of Local Industrial and Commercial Establishments

CD director or local industrial CD coordinator briefs key officials (company officials, plant managers, store managers, etc.) representing all industrial and commercial establishments in the community on the situation and recommends actions to be taken (e.g., review individual facility emergency plans, update plans and emergency assignments of supervisors and employees as required, brief supervisors, etc.).

Stress *critical importance of EMP protection* and urge officials to appoint an EMP Protection Coordinator for their plant, company, etc.

Review with company CD coordinators the adequacy of existing arrangements for (a) receipt of warning at the facility and its dissemination within the facility; (b) movement of employees to fallout shelters; (c) management of fallout shelters within the facility; and (d) crisis evacuation of employees (if plans have been developed), but with provision for essential industries in risk areas to be kept in operation by key workers commuting from closer host areas. (See Section 7 of this guide, on ad hoc planning for crisis evacuation from risk areas, including planning for construction of expedient shelters for key workers.)

Assist facility management to correct deficiencies with respect to warning, movement to shelter, or shelter management, or crisis evacuation.

Identify the industry and government representatives who will maintain liaison with each other with respect to warning, movement, and shelter management actions described in Sections 11 and 17 of this guide.

Review with appropriate industry or business officials plans for bringing company control centers to a state of readiness, consistent with local government action with respect to EOCs (as outlined in Section 8 of this guide on improving EOC facilities, Actions to Improve EOC or to Develop an EOC Facility, as Required).

Outline for industry and business leaders actions that should be taken to *improve survivability of physical assets in risk areas,* such as (a) closing window blinds or covering windows, and taking other *fire prevention* actions; and (b) sandbagging essential equipment, or greasing equipment, covering it with tarps or plastic sheets, and then *mounding earth several feet deep over the equipment, to protect it from blast and fire effects.* (Large-scale high explosive tests show that covering equipment with earth can provide very effective protection, because under blast pressure the earth tends to form a protective arch, similar to the way earth over a culvert pipe carries most of the load.) The earth cover also protects equipment from fire, which could destroy or damage even more equipment than the blast wave.

3. Check Readiness of Industrial or Commercial Facilities

Local government officials provide guidance and work with company officials, plant managers, etc., concerning IR actions recommended to be taken, reviewing of emergency assignments for all employees, etc.

Local CD officials should assist plant managers in determining need for accelerated training in CD skills (e.g., radiological monitoring or shelter management) for industrial personnel, for service in plant or commercial facilities planned for use as public shelters or in other public shelters in the locality, and recommend the commencement of such accelerated training. (See Section 5 of this guide.)

Local government fire officials, together with industrial fire marshals and other nongovernment fire personnel, should review and update fire plans, giving special attention to fire prevention actions (such as covering windows) and water for fire control; review plans for mutual support; review plans for augmenting the company fire services (to reduce dependence on outside help that might not be available in the event of attack); check readiness of all equipment, including radiological monitoring instruments; etc. (See Section 12 of this guide.)

Local government police officials, together with industrial guard forces, company guard units, or other nongovernment police or guard staffs, should review and update police plans, giving special attention to plans for mutual support, for the

movement of employees to fallout shelter, and for securing the plant or facility in case of crisis evacuation. (See Section 16 of this guide on law enforcement.)

The local CD director or person in charge of accelerated training should assist plant managers in scheduling CD courses for industrial or commercial employees, using qualified industrial personnel as instructors if they are available. (See Section 5 of this guide.)

Where industrial or commercial facilities are planned for use as fallout shelters, or for temporary lodging of evacuees in host areas in case of crisis evacuation, local CD officials and radiological defense and shelter management staffs should work with facility managers in preparing shelter areas for occupancy. (See Sections 6, 12, and 17 of this guide.)

Where industries or commercial facilities in risk areas have been designated as "essential" in crisis evacuation planning, facility managers should work with local and State CD staffs to develop procedures to keep the facility in operation during the evacuation period (including commuting by key workers). ("Essential" activities could include production and distribution of food and other life-support essentials, refining, some news media operations, etc.)

For later use, if indicated, the local CD officials, together with industry managers, should prepare written materials for briefing all employees on emergency plans for industrial or commercial facilities.

4. Brief All Employees on Facility Emergency Plans and Continue Emergency Preparations

Local government officials should advise industrial and commercial facility managers when it is appropriate for them to brief all employees on emergency plans for their facilities; to issue information to employees on these emergency plans; and to arrange for concurrent issuance of appropriate news release. (Such releases should be coordinated with local Emergency Public Information officer. See Section 3 of this guide.)

Advise plant managers to consider and, if deemed appropriate, to conduct shutdown drills and/or release drills for plant supervisory staff and employees. Where risk area plants must be shut down over a period of hours or days to avoid damage (chemical plants, steel plants, etc.), this would have to be done by commuting key workers, in case of crisis evacuation.

The local government will advise industry managers to commence CD courses for some or all employees as previously planned.

When the local government commences accelerated marking or stocking of fallout shelters, local officials should request the managers of industrial or commercial facilities planned for use as fallout shelters to take such action in cooperation with the local government effort. (See Section 13 of this guide.)

5. Take Fire Prevention Actions

Cover windows and take other fire prevention actions outlined in step 2.

6. Protect Essential Equipment from Blast and Fire

Take actions outlined in step 2 for protecting essential equipment by sandbagging or mounding earth over equipment. Also take *EMP protection actions.*

SECTION 22

ACTIONS TO INCREASE READINESS IN RURAL AREAS

This section outlines actions which local governments and their corresponding U.S. Department of Agriculture (USDA) local Food and Agriculture Council can take during periods of international crisis to reduce the vulnerability to attack effects of farmers, their crops, and livestock.

The actions outlined are of a general nature, relating primarily to specialized types of emergency public information (EPI) to be disseminated through the coordinated efforts of local government officials and USDA (local Food and Agriculture Council).

Many of the Increased Readiness (IR) actions described in this Section would be the responsibility of the USDA local Food and Agriculture Council, acting under instructions and guidance from USDA and its State Food and Agriculture Council and in close coordination with the head of local government and the civil defense (CD) director. Because many of these actions are specialized forms of emergency public information, Section 3 of this guide on EPI should be consulted when developing IR actions based on this section.

Actions to Increase Readiness in Rural Areas

1. Review and Update Rural CD Plans and Check Availability of Specialized EPI

Local government officials meet with USDA local Food and Agriculture Council and review responsibilities and plans for rural CD EPI, including procedures by which decisions and guidance can be obtained quickly from officials responsible.

Determine availability of rural EPI materials. If a plan for in-place protection has been completed, review resulting maps and instructions for citizens on "where to go and what to do" in case of attack. If a plan has not been completed, begin preparation of specialized guidance for rural families on such subjects as how to improve or improvise additional fallout protection for the family, and any employees, in homes with or without basements; as well as how to improvise protection for people or domestic animals in barns, stables or root cellars, using baled hay, sacked or bulk grain, vegetables, and other potential shielding materials available on farms.

See Section 3 of this guide, Actions for Emergency Public Information, steps 1, 2, and 3, which suggest additional and related EPI actions appropriate for both rural and urban areas. Also see designs for expedient shelters provided at the end of Section 6.

2. Commence Moderate Step-up in Rural CD Public Information Activities

Commence activities representing a moderate step-up in rural civil defense EPI activities. Activities undertaken by local government officials and USDA local Food and Agriculture Council should be closely coordinated so that the public in rural areas will receive consistent guidance.

Meet with leaders of local rural organizations such as 4-H, Grange, Farmers Cooperatives, National Farmers Organization, Ruritan, etc., to brief them on the situation and local plans. Provide speakers on rural CD for meetings of the above groups and other local organizations.

Step-up distribution of rural CD literature and increase emphasis on rural CD in work of county agents and home demonstration agents.

See also Section 3 of this guide, step 4.

3. Commence Dissemination of Shelter Information to the Public

See Section 3 of this guide, step 5. This step should be taken in conjunction with action under step 5 of Section 3 and consists of the release of specialized guidance for rural families on improving or improvising fallout shelter for families and employees and for domestic animals; emergency food and water supplies for people and livestock; etc.

An example of EPI material for rural areas, including shelter for livestock, is shown on the next page. If other materials are not available, *the materials shown could be used during a crisis for printing local EPI materials,* after coordination with the USDA local Food and Agriculture Council.

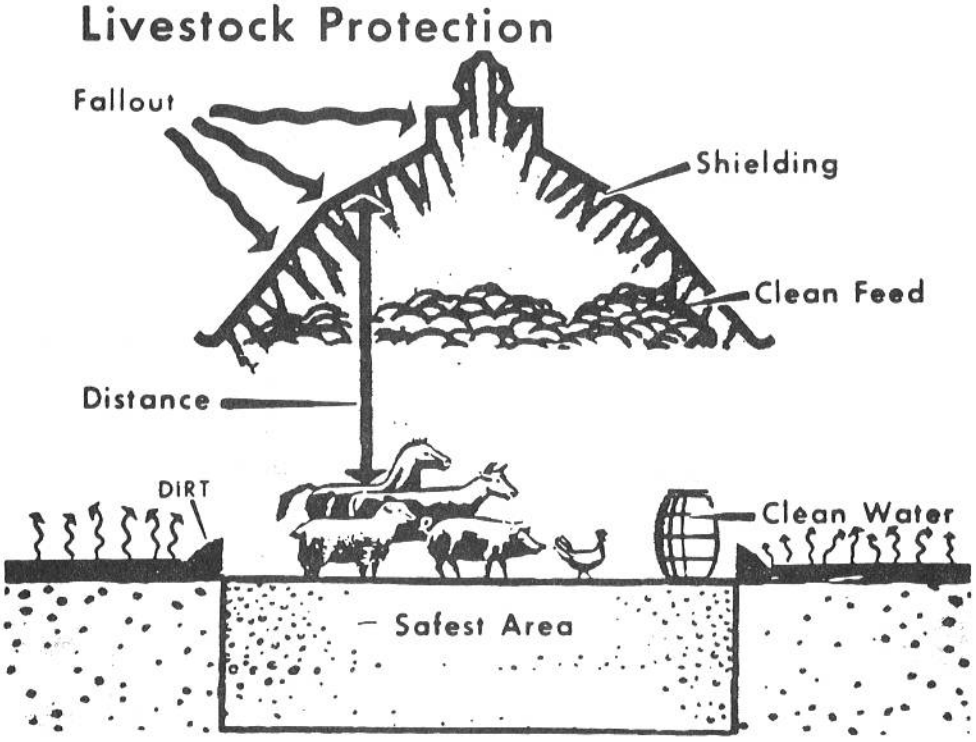
4. Local Authorities Urge the Public in Rural Areas to Make Final Crisis Preparations Short of Taking Shelter

See Section 3, step 6 of which this step is a special case.

Specialized information should be given to rural families, including the desirability of leaving a radio or television set on to receive possible attack warning and to take along a portable radio while working in the barn, stables, or fields.

As appropriate, USDA may urge farmers to take such steps as restricting livestock to pastures close to barns or other potential shelter, or keeping animals under cover. Similarly, farmers may be urged, when appropriate, to harvest crops close enough to maturity to be used without serious loss of yield, and which might be lost if fallout conditions prevented harvesting for two weeks.

IMPROVISING FALLOUT PROTECTION ON A FARM



THE BEST PROTECTION LIKELY TO BE AVAILABLE FOR LIVESTOCK AGAINST RADIOACTIVE FALLOUT IS THE BASEMENT OF A TIGHT BARN WITH A LOFT FILLED WITH HAY.

You should place as much of your livestock and produce in barns as you can. A normally filled hayloft affords some shielding from fallout radiation for animals below. Farm machinery, troughs, wells and any produce you cannot get into barns should be covered with tarpaulins. You should store as much water in covered containers as you can, taking the precautions already outlined. Radiation harms only living creatures; therefore, food, water, etc., would be safe if covered.

Afterward, any livestock exposed to fallout could be washed or brushed to remove fallout particles. Water from wells and streams would be safe for animal use.

Animals which have been exposed to early fallout or which have fed on contaminated pastures could be slaughtered and the muscle meat would be fit for human consumption. Internal organs, however, such as liver and spleen, should not be eaten unless no other food is available. Chickens and eggs would be a particularly important direct food resource because they are relatively resistant to radiation, especially if they are raised under cover using safe packaged feeds. Potatoes, corn and other field crops exposed to early fallout would be safe to eat after cleaning.

Your County Agent can help you decide what crops, pasturage and methods will be best and safest to use. Seeds of all sorts are quite resistant to radiation and do not require any special protection.

Example of Emergency Public Information Material for Rural Areas

FEMA PUBLICATIONS REFERENCED IN THIS GUIDE

SECTION NO.	SECTION TITLE	PUBLICATION TITLE
—	Introduction	CPG 1-10 (7/87): Guide for the Development of a State and Local Continuity of Government Capability
3	Actions for Emergency Public Information	H-20 (88): Planning for Survival HS-4 (3/87): Preparedness Planning for a Nuclear Crisis FEMA-59 (5/84): Shelter Management Handbook
5	Actions to Accelerate Civil Defense Training	IG-81 (9/84): Fundamentals Course for Radiological Monitors HS-3 (9/87): Radiological Emergency Management HS-4 (3/87): Preparedness Planning for a Nuclear Crisis MP-72 (8/76): How to Use Your Radiological Instruments FEMA-59 (5/84): Shelter Management Handbook SM-11 (6/81): How to Manage Congregate Lodging Facilities and Fallout Shelters CPG 2-8 (4/87): Sheltering and Care Operations CPG 2-20 (1/88): Life Support Operations in Shelters CPG 2-21 (5/88): Habitability and Human Problems in Shelters IG-2 (5/83): Law and Order Training for Emergency Management SM-2 (6/77): Law and Order Training for Civil Defense Emergency IG 2.1 (6/77): Law and Order Training for Civil Defense, Part B SM 9.2A (7/71): Support Assistants for Fire Emergencies, Part A SM 9.2B (7/71): Support Assistants for Fire Emergencies, Part B IG-8 (8/63): Basic Rescue Course IG-9 (3/80): Light Duty Rescue Course
6	Actions by Host Area Governments to Prepare for Arrival of Evacuees	CPG 2-8 (4/88): Sheltering and Care Operations
12	Actions to Increase Radiological Defense Readiness	CPG 2-1 (4/78): Radiological Defense Preparedness CPG 2-6.2 (6/77): Radiological Defense Manual CPG 2-6.4 (9/83): Radiation Safety in Shelters CPG 1-30 (6/81): Guide for Design and Development of a Local Radiological Defense System
13	Actions to Increase Inventory of Public Shelter	CPG 1-19 (7/83): Guidance for Development of an Emergency Fallout Shelter Stocking Plan
17	Actions to Increase Operational Readiness of Public Shelter	CPG 2-6.4 (9/83): Radiation Safety in Shelters CPG 2-20 (1/88): Life Support Operations in Shelters
21	Increased Readiness Actions for Industry	FEMA-141 (7/87): Disaster Planning Guide for Business and Industry

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* *Local civil defense directors should assure that the publications listed above are stocked in sufficient quantities to meet Increased Readiness requirements.*

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