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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Areas Around Nuclear Facilities Should Be Better Prepared For Radiological Emergencies

GAO visited 11 nuclear facilities and sent questionnaires to the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico to find out how well prepared nuclear activities and the areas around them are for a radiological emergency.

Most of the facilities seemed prepared to respond to nuclear releases within their boundaries but some questions arose as to whether the public would be adequately protected should a release extend outside facility boundaries.

This report makes recommendations to the Departments of Defense and Energy, the Nuclear Regulatory Commission, and the Federal Emergency Management Agency to increase preparedness for a nuclear accident.

UNITED STATES GENERAL ACCOUNTING OFFICE

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COMPTROLLER GENERAL OF THE UNITED STATES
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The President of the Senate and the
Speaker of the House of Representatives

This report discusses the emergency response planning and capabilities at the nuclear facilities of the Nuclear Regulatory Commission, Department of Defense, and Department of Energy and the surrounding communities.

We made our review as part of our evaluation of the effectiveness of the Commission's regulatory activities as required by the Energy Reorganization Act of 1974 (42 U.S.C. 5876).

We are sending copies of this report to the Director, Office of Management and Budget; Chairman, Nuclear Regulatory Commission; the Secretaries of the Departments of Defense and Energy; the Administrator of General Services; and the Acting Director, Federal Emergency Management Agency.

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

AREAS AROUND NUCLEAR FACILITIES SHOULD BE BETTER PREPARED FOR RADIOLOGICAL EMERGENCIES

D I G E S T

Today, 43 States have sizable fixed nuclear facilities within their boundaries. These include nuclear powerplants, military installations, and Federal nuclear research reservations.

There is only limited assurance that persons living or working near these nuclear facilities would be adequately protected in case of a serious--although unlikely--nuclear accident. Most facilities GAO visited appeared prepared to respond to radiological releases within their boundaries, but deficiencies in planning and preparedness cast some doubt on whether effective actions would be taken to protect the public should a nuclear release extend outside facility boundaries. 1/

The Nuclear Regulatory Commission and the Departments of Defense and Energy own or regulate all major fixed nuclear facilities in the United States. GAO visited 11 of the facilities, all of which have the potential for accidently releasing radioactive material that could be above the levels the Environmental Protection Agency believes might warrant action for protecting public health and safety. GAO also talked to officials in State and local governments near the facilities visited and sent questionnaires to the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico to obtain data on the status of their emergency planning and preparedness. All the States responded.

1/See app. II, Comparison of Emergency Response Planning and Capability at or Near Nuclear Facilities.

The Nuclear Regulatory Commission has the primary responsibility for assisting State and local governments in developing emergency response plans for radiological releases from nuclear facilities. As part of its planning assistance to States, the Commission reviews State plans to determine whether they contain what the Commission considers to be essential planning and preparedness elements. The Commission has found only 10 State plans that have all the essential elements. But it continues to license nuclear power reactors in other States.

Federal law does not require States to have peacetime nuclear emergency plans; nor does it require States with plans to test them. Even so, 41 States have some type of peacetime nuclear emergency plan.

--Nine have tested their plans in full-scale drills.

--Sixteen have had drills involving some, but not all, people who would be expected to respond to an emergency.

--The remaining 16 have not tested their plans.

Problems found with plans that were tested indicate that an untested plan would probably be ineffective in an emergency situation. (See pp. 17 to 19.)

Emergency planning zones around commercial nuclear reactors are much smaller than the area that could be affected by a large radiological release. The zones are usually areas within 5 miles or less of reactors and are based on Nuclear Regulatory Commission

radiation exposure criteria, 1/ which were intended as guides for selecting nuclear powerplant sites but not for carrying out emergency actions to protect the public. An Environmental Protection Agency/Nuclear Regulatory Commission task force has recommended that emergency planning zones around nuclear reactors be increased to about 10 miles. Based on a review of potential accidents at nuclear reactors, the task force believes this is the most likely area where immediate emergency actions, such as evacuation, might have to be taken for large accidental releases. GAO concurs. (See pp. 20 to 22.)

Emergency preparedness at the local level appears almost nonexistent around Departments of Defense and Energy facilities. Facility operators believe their facilities pose no threat to surrounding communities and, therefore, do not inform local authorities of their expected response in the event of an emergency. Department of Defense officials said that informing local authorities of potential hazards would violate certain Department of Defense security policies. (See pp. 22 to 27.)

One of the most important steps during a nuclear emergency is for facility operators to promptly notify State and local authorities of an accident. Departments of Defense and Energy facilities were not adequately testing their communication systems with State and local officials. (See pp. 11 to 13.)

Department of Energy facilities did not use simulated accident conditions while testing their emergency response capabilities, nor

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1/The Commission's radiation exposure criteria are five times higher than the exposure levels the Environmental Protection Agency believes might require emergency action to protect the public in the event of releases of radioactivity from nuclear facilities.

Tear Sheet

did they conduct comprehensive tests of their plans. Also, Energy headquarters has made no complete review of overall facility emergency plans. (See pp. 8 and 9.)

People living near fixed nuclear facilities are not well informed about potential hazards nor about the actions that may be necessary to avoid or minimize radiation exposure. Some local government agencies have attempted to encourage the dispensing of information on hazards; but, on the other hand, some facility operators have discouraged efforts to inform the public. (See pp. 28 to 31.)

The Federal Emergency Management Agency is being established to bring together the major responsibilities for both peacetime and wartime emergency planning. This new agency is to serve as a focal point for State and local governments' emergency planning and preparedness activities; but it will not be responsible for peacetime radiological emergency response planning. The Nuclear Regulatory Commission will retain this responsibility unless the Federal Emergency Management Agency assumes it through administrative actions.

RECOMMENDATION TO THE DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY

The Director, Federal Emergency Management Agency should:

--Assume the responsibility for making policy and coordinating radiological emergency response planning around nuclear facilities. The Director should broaden radiological emergency planning assistance to State and local governments around Departments of Defense and Energy facilities that have a potential nuclear hazard.

RECOMMENDATION TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION; THE SECRETARY OF DEFENSE; AND THE SECRETARY OF ENERGY

The Chairman, Nuclear Regulatory Commission, and the Secretaries of Defense and Energy should:

--To the extent that national security is not jeopardized, require that people living near nuclear facilities be periodically provided with information about the potential hazard, emergency actions planned, and what to do in the event of an accidental radiological release.

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

The Chairman, Nuclear Regulatory Commission, should:

--Allow nuclear powerplants to begin operation only where State and local emergency response plans contain all the Commission's essential planning elements. In addition, the Commission should require license applicants to make agreements with State and local agencies assuring their full participation in annual emergency drills over the life of the facility.

--Establish an emergency planning zone of about 10 miles around all nuclear powerplants as recommended by the Environmental Protection Agency/Nuclear Regulatory Commission task force, and require licensees to modify their emergency plans accordingly.

RECOMMENDATION TO THE SECRETARIES OF DEFENSE AND ENERGY

The Secretaries of Defense and Energy should:

--To the extent that national security is not jeopardized, require facility commanders at Department of Defense facilities and Department of Energy facility

Tear Sheet

operators to develop formal, explicit agreements with State and local government agencies having emergency responsibilities. These agreements should clearly delineate the roles, responsibilities, and capabilities of each party in the event of a radiological emergency involving the area outside the facility. They should also include provisions that State and local emergency response agencies will be encouraged to participate in annual drills with the facilities.

RECOMMENDATION TO THE SECRETARY OF DEFENSE

The Secretary of Defense should also:

--Develop methods of working with States in peacetime nuclear emergency response planning where its nuclear facilities' classification is justified on national security grounds. For example, Defense could deal with a few key State and local officials on a classified basis. Another alternative would be to establish emergency notification procedures and arrangements with all State and local jurisdictions where military installations have, or have the potential for, nuclear capabilities, without confirming or denying the existence of nuclear materials.

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

The Secretary of Energy should also:

--Require major nuclear materials production and research reservations under Energy's control to perform radiological emergency response drills at least annually. These drills should be comprehensive (site-wide) and should test emergency response plans against simulated accident conditions that are realistic.

--Require periodic complete headquarters review of each facility's emergency plans.

AGENCY COMMENTS

The Departments of Energy and Defense, General Services Administration (Federal Preparedness Agency), Nuclear Regulatory Commission, and Office of Management and Budget provided comments on this report.

Appendix III contains GAO's responses to those substantive comments not incorporated into the report. The full texts of the agencies' comments are in appendices IV through VIII.

The Department of Energy generally agreed with the report and said it planned to take actions on the problems identified. (See pp. 57 to 59.)

The Department of Defense did not take issue with the findings, conclusions, or recommendations but did suggest that a discussion of the complete Federal emergency response organization should be included in the report. (See pp. 60 to 62.)

The General Services Administration generally agreed with the report's findings. However, it expressed concern that linking the nuclear powerplant licensing process to State and local peacetime nuclear emergency response plans might present a major obstacle to the licensing process. (See pp. 63 to 66.)

The Nuclear Regulatory Commission agreed that some improvements were needed in State and local peacetime nuclear emergency preparedness, but said that the general tone of the draft report exaggerated the problems. The Commission disagreed with the recommendation that nuclear powerplant licensing should be made contingent on emergency response plans containing all the Commission's essential planning elements. The Commission said that State and local plans are not essential in determining whether nuclear powerplants could be operated without undue risks to public health and safety. (See pp. 67 to 78.)

GAO believes that only by linking the adequacy of the State or local capabilities to implement offsite protective actions to the licensing process can there be sufficient assurance that the public will be protected in the event of a major emergency at a nuclear powerplant. The possibility of not being able to have this matter resolved after a powerplant is licensed would render such an alternative unacceptable. Thus, if State or local authorities are unable to provide such assurance, then a potential site should be eliminated from consideration during the licensing process.

The Office of Management and Budget did not comment on specific findings and recommendations, but expressed support for the concept of having the new Federal Emergency Management Agency assume responsibility for policymaking and coordination of radiological emergency planning. (See p. 78.)

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ABBREVIATIONS

ACRS	Advisory Committee on Reactor Safety
AEC	Atomic Energy Commission
CFR	Code of Federal Regulations
DCPA	Defense Civil Preparedness Agency
DOD	Department of Defense
DOE	Department of Energy
EACT	Emergency Action and Coordination Team
EPA	Environmental Protection Agency
FDAA	Federal Disaster Assistance Administration
FEMA	Federal Emergency Management Agency
FPA	Federal Preparedness Agency
FRPPNE	Federal Response Plan for Peacetime Nuclear Emergencies
GSA	General Services Administration
IRAP	Interagency Radiological Assistance Plan
LPZ	low population zone
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
PAG	Protective Action Guidelines
SP	Office of State Programs

CHAPTER 1

INTRODUCTION

Forty-three States have sizable fixed nuclear facilities within their boundaries. These facilities include commercial nuclear powerplants, military installations, and Federal nuclear materials production and research reservations. In addition, 165 nuclear powerplants are being built or planned that will increase the Nation's nuclear electrical generating capacity nearly five-fold before the end of this century. The growth in the number of nuclear facilities has caused increased public concern about the potential radiological dangers.

NUCLEAR ACCIDENTS: HIGHLY UNLIKELY, BUT POSSIBLE

While experts agree that detonation of nuclear materials at power reactors presently in operation is impossible and almost impossible at other types of nuclear facilities, they also agree that less severe accidents involving an offsite release will probably occur. However, few agree on either the level of probability of occurrence (the odds) or the extent of the consequences. Nuclear energy advocates conclude that accidents are highly unlikely and would most likely have little consequence. Opponents contend that accidents with catastrophic consequences are possible. Both sides are armed with studies and experts to support their conclusions.

One of the most widely quoted and criticized studies on nuclear accident risk is the Rasmussen Reactor Safety Study, done in 1975 for the Nuclear Regulatory Commission (NRC) to determine the risk of an accident and its consequences in operating nuclear powerplants. The study concluded that the likelihood and the possible consequences of reactor accidents is much smaller than many nonnuclear accidents. For example, the study estimated the chances of a person being killed by lightning, hurricanes, or tornadoes to be about 2,000 times greater than being killed by a nuclear powerplant accident.

Against these types of odds, however, the study concluded that nuclear accidents may happen. In our opinion, this presents a potential adverse health consequence that provides a sobering contrast to the estimated risk. It also states that although consequences of the more likely nuclear accidents are not expected to be significant, those associated with the more serious, less likely accidents could include hundreds of immediate fatalities and latent health consequences affecting thousands.

Critics of the study contend it underestimates both the probability of an accident and the possible consequences. Several point out that the study does not consider terrorism in assessing risks and that it has minimized consequences by using over-optimistic assumptions. Recently, an independent review group established by NRC to evaluate the Rasmussen study also questioned the accuracy of the accident probability developed for the study. The review group found that the amount of data available to the study was not sufficient to develop accurate accident probabilities. The review group concluded the accident risk estimates presented in the study should not be taken at face value either in the regulatory process or for public policy purposes.

Despite the dispute over potential risk and consequences, the fact remains that serious nuclear accidents may be highly unlikely but are possible, and might have catastrophic consequences.

PUBLIC HAZARD: EXPOSURE TO RADIOLOGICAL RELEASES

The greatest danger from a nuclear accident is the release of significant amounts of radioactive material into the environment. Public exposure to radioactive material may cause immediate illness, an increase in the chance of developing cancer, or death.

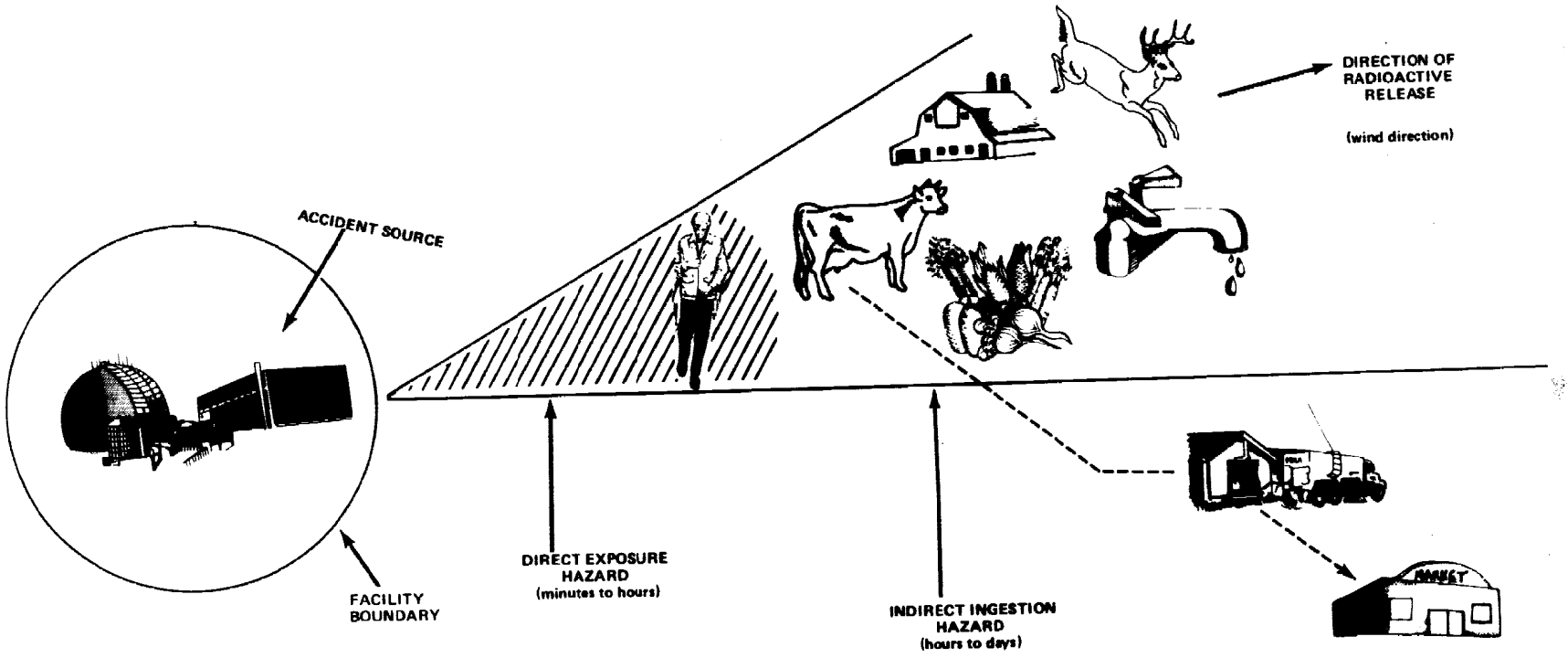
In the event of an accident involving an offsite release, public health is threatened in two ways:

--People exposed to an airborne radioactive cloud near the source of the accident can receive unsafe levels of radiation either externally or by breathing-in the radioactive material. This type of exposure usually occurs within a short period following the release.

--In addition, radioactive fallout can contaminate food and water supplies.

Many factors, including weather conditions, wind direction, and the geography of the area, would determine the path and extent of the hazard. The following illustration shows how radioactivity might spread.

RADIOLOGICAL IMPACT OF A SERIOUS ACCIDENTAL RELEASE



PUBLIC PROTECTION: REDUCE OR MINIMIZE RADIATION EXPOSURE

After an offsite release occurs, nuclear facility operators estimate the amount of radiation exposure to population groups in the path of the release. If the estimate indicates a potential health hazard exists, then prompt actions are necessary to protect the public from overexposure. Appropriate responses to threats of direct exposure may include evacuation, sheltering, administering drugs, 1/ using special breathing apparatus to lessen the radiation hazard, and curtailing access to contaminated areas. Responses to indirect exposure may include controlling access to contaminated foodstuffs, and decontaminating contaminated foods. Choosing the response that provides maximum health protection for an endangered public is not an easy task. Generally, a number of decisions must be made in a short time with a limited amount of information.

To illustrate the activities in a typical nuclear emergency response sequence, EPA has divided the activities into three time phases--emergency, protection, and restoration.

--The emergency phase, characterized by its urgency, involves assessing the situation, determining the need for protective action, and initiating the action. Promptly notifying State and local officials responsible for responding to an offsite release is the most important step during this phase.

--The protection phase involves actions taken to minimize public exposure to radiation, such as evacuation and sheltering.

--The restoration phase includes actions taken to restore conditions to normal, such as decontamination of equipment, land, and buildings.

EPA has also developed guidelines based on a study of adverse health effects resulting from radiation exposure. These guidelines include trigger points to aid in determining when and what protective actions should be taken for

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1/A major concern during a radiological emergency at nuclear power reactors would be that a radioactive material called Iodine-131 might be absorbed by the thyroid glands of individuals exposed to radiation. Drugs are available to prevent Iodine-131 from getting into the thyroid gland.

various levels of projected radiation exposure. All the facilities covered in our review could release radioactive material above the EPA limits requiring one or more of the recommended protective actions. 1/

SCOPE OF STUDY

Our study concentrated on the emergency and protection phases of a peacetime nuclear emergency around nuclear facilities. We reviewed plans for controlling and assessing the radiological hazard and for notifying offsite authorities of public health risks. We also reviewed plans of State and local authorities to carry out protective measures to minimize exposure to airborne radioactive material.

We performed our study at:

--Five commercial powerplants licensed by NRC.

--Three Department of Energy (DOE) research reservations.

--Three Department of Defense (DOD) military installations having nuclear materials.

At these 11 fixed nuclear facilities we:

--Interviewed installation officials and reviewed emergency plans and capabilities.

--Interviewed State and local officials, and reviewed their plans and capabilities for responding to a nuclear emergency.

In addition, we surveyed, by questionnaire, authorities in the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico to obtain data on the status of their emergency planning and preparedness. We also interviewed NRC, DOE, and DOD officials; reviewed agency policy and procedure documents; and reviewed studies and reports on actual peacetime nuclear emergencies.

Our study did not address emergency preparedness for nuclear transportation accidents. However, we recently completed a study of issues affecting the safety and security of nuclear shipments. As part of this study, we evaluated emergency response planning at the State and local level

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1/See app. I for EPA's radiation exposure trigger points and the recommended action for each.

for accidents involving the transportation of nuclear materials. We will issue a report on the results of our transportation study in the near future.

CHAPTER 2

FACILITY ROLE IN EMERGENCY PREPAREDNESS

All major fixed nuclear facilities in the United States are either owned by DOE and DOD, or regulated by NRC. These organizations are ultimately responsible for assuring that facilities under their control will not threaten public health and safety. In practice, however, the role of these organizations has been limited to assuring that the facilities (1) are prepared to cope with accidental releases which remain within a facility's boundaries and (2) have procedures for notifying State and local authorities of any potential release which could threaten public health and safety. In general, these agencies assume the appropriate State and local authorities will be able to effectively implement protective measures, including evacuation of nearby residences when notified of an emergency.

All the facilities we visited had developed plans and procedures, and had the resources to provide reasonable assurance that onsite nuclear emergency activities could control and mitigate the accidential release of nuclear material which remained within the facilities' boundaries.

In addition, onsite facility plans and procedures also identified and provided for activities and measures that may need to be taken if a radioactive release threatened to go beyond a facility's boundary. For offsite releases, however, a facility's role is primarily advisory and involves (1) notifying offsite authorities of the potential hazard, (2) providing ongoing assessments of the hazards, (3) providing radiological assistance if requested, and (4) recommending to offsite State and local authorities public protective measures that should be taken. The responsibility for implementing actions to protect public health and safety remains with local authorities.

Although we found that most facilities appeared able to fulfill their emergency role in their onsite emergency plans, this role could not assure the protection of public health and safety by merely assuming that local authorities can respond to a nuclear emergency affecting areas outside a facility's boundaries without verifying their capabilities to do so. Federal organizations have not adequately assured that their facilities do not pose potential radiological hazards to the public.

FACILITY RESPONSIBILITIES FOR NUCLEAR RELEASES REMAINING ONSITE

Policy statements indicate that NRC, DOD, and DOE recognize their responsibility for protecting employees, property, the environment, and the public from radiation hazards arising from their operations or activities. These agencies also have established peacetime nuclear emergency planning and preparedness requirements governing the facilities they regulate or operate. These requirements supplement design, construction, and operation requirements which are intended to prevent accidents from happening. NRC emergency planning and preparedness requirements apply to the commercial nuclear powerplants it licenses. DOE's requirements apply both to DOE contractors who operate its nuclear facilities, and to DOE headquarters and field office personnel. DOD requirements are directed at the individual military services, and apply to military commands and installations having nuclear materials.

In each case, the Federal organizations require fixed nuclear facility operators to develop nuclear emergency plans. At a minimum, these onsite plans

--establish procedures for onsite accident control,

--provide for assessment of the radiological hazard from the accident,

--require notification of offsite authorities if the potential exists for the radiation release to go offsite, and

--require periodic onsite drills to test emergency response preparedness.

Within this broad framework, the onsite plans

--provide for emergency personnel teams;

--identify responsibilities and communication links;

--identify available equipment and facilities;

--establish criteria to use in assessing accident severity, and determining notification and required protective measures; and

--provide for training of emergency response personnel.

NRC requires its licensees to have an acceptable onsite nuclear emergency plan before a license is issued for a nuclear powerplant to begin operation. NRC procedures also require it to inspect licensees periodically to be sure that plans are kept up to date. NRC licensees are required to conduct simulated nuclear emergency drills at least annually.

DOE requires its field organizations to have written emergency plans for the entire site and for each facility or contractor operation within the site where a nuclear accident can occur. Facility plans are generally prepared by the contractor operating in that area, and the field organization is responsible for evaluating and approving the plans. Tests and exercises of site and facility plans are to be conducted under simulated accident conditions, and appropriate changes are required to correct weaknesses and deficiencies identified. Generally, DOE does not require plans or testing for nuclear emergencies which may result in radiation going offsite.

In our view, DOE facility emergency plans should be tested against simulated accident situations which portray, as realistically as possible, the types of radiological emergencies that could occur at a facility. Outside of an actual emergency, this is the only way that DOE can adequately assure that agency and contractor personnel can effectively respond to radiological emergencies. We also believe that in many cases radiological emergencies within a DOE facility could affect other activities at the facility and require facility-wide responses. Therefore, we believe that DOE should periodically require its facilities to conduct coordinated emergency drills involving all activities within a facility.

DOD requires the military services to establish nuclear emergency plans at all military installations having nuclear weapons or nuclear material. The services and individual military commands have established inspection requirements for testing and evaluating nuclear emergency response preparedness. Installation commanders are generally required to conduct simulated nuclear emergency drills at least once a year.

ONSITE NUCLEAR-FACILITY PREPAREDNESS

Most of the facilities we visited had the necessary nuclear emergency plans, equipment, and trained personnel for responding to onsite nuclear emergencies. Emergency plans at these facilities provided detailed procedures and activities to be followed by site personnel in the event of an accident, and they clearly identified individual and

organizational responsibilities during an emergency. We found that the individuals responsible for implementing and carrying out the onsite emergency activities were familiar with their emergency role and able to assess and minimize a potential threat to public health and safety. In addition, we found that emergency equipment was available in kit form at designated areas.

To varying degrees, facility operators tested their onsite emergency preparedness at least once a year at all facilities we visited. The drills at DOD and commercial facilities are site-wide and generally involve simulated nuclear accidents that demonstrate the response capabilities of all nuclear emergency resources identified in the facilities' nuclear emergency plans. The drills require a wide range of response actions, including controlling the accident, providing life-saving and medical services, assessing the radiological hazard, and evacuating facility personnel. At DOD facilities, drills were unannounced; but at NRC-regulated installations, facility personnel were told in advance when the drills would be held. Both DOD and commercial facilities staged simulated accidents similar to a real accident.

Based on our evaluation, it appears that onsite response and preparedness is well developed. Although we found some minor discrepancies in DOD and NRC onsite plans and preparedness, we do not believe that these would seriously detract from the performance of onsite emergency activities. We are uncertain as to the overall emergency preparedness at DOE facilities, however. We found that testing was being carried out annually, but it was not done in a manner that adequately demonstrated whether the overall facility emergency plan would really work. Some facilities have not been testing their emergency response plans under conditions simulating realistic emergency situations, although DOE requires this. For instance, at DOE's Idaho Falls, Idaho, facility, the emergency drills for the past year have tested only evacuation procedures. No accident situations were simulated that tested facility capabilities to assess and respond to the types of radiological emergencies that could happen at the facility.

We also found that DOE facilities were testing emergency response plans in a piecemeal fashion.

--Each of the DOE facilities we visited had several separate operations at different locations.

--Contractors and agency personnel responsible for the various activities within the DOE facilities have been testing their emergency plans and procedures individually.

Although each facility has an overall general emergency plan, none of the three DOE facilities we visited has been conducting emergency drills covering the entire facility.

DOE's fragmented approach to emergency planning encourages DOE facilities to test their response plans in a piecemeal fashion: DOE headquarters divisions review only emergency planning activities that relate to their particular areas of interest. For example, the DOE division responsible for weapons production reviews only those portions of emergency plans that relate to nuclear weapons accidents.

In 1976 DOE set up an Emergency Action and Coordination Team (EACT) made up of those groups within the agency with emergency planning and response roles. EACT was supposed to consolidate and coordinate the activities of the various groups involved in emergency planning. However, each of the three DOE divisions with major emergency planning responsibilities still reviews only those portions of the facility plans over which it has jurisdiction. No unified coordinated reviews of overall facility emergency plans have ever been made, although this has been an agency requirement since December 1976. DOE officials told us that EACT lacked the resources to perform such coordinated reviews.

FACILITY RESPONSIBILITIES FOR NUCLEAR RELEASES GOING OFFSITE

Facility onsite preparedness provides little assurance that the public will be protected from releases going offsite. In general, Federal organizations believe that, since protective measures for offsite releases are the State and local governments' responsibility, a facility's role is limited to (1) notifying State and local agencies of potential offsite releases; (2) providing assessments of the offsite hazard; and (3) recommending protective measures, such as evacuation. DOE and DOD facilities are also prepared to provide offsite radiological monitoring assistance, if State and local authorities request it. In our view, the Federal organizations, by not adequately assuring that local authorities can effectively implement protective measures, have failed to meet their responsibility to protect the public from serious accidental releases from their facilities.

All the facilities we visited had plans for notifying State and local authorities and recommending protective

measures in the event of a radiological emergency threatening public health and safety. As indicated earlier, however, facility operators view emergency actions to protect public health and safety outside a facility's boundaries as State and local authorities' responsibility. Therefore, the level of protection afforded people living around nuclear facilities in the event of a serious radiological release largely depends on two things: (1) operators' promptness in notifying State and local authorities about the threat and (2) State and local authorities' capability to take the emergency actions recommended by the facility operators.

This is where emergency preparedness breaks down. While facility operators feel sure that prompt notice can and will be given and that offsite authorities will be prepared to respond, State and local officials do not all share this confidence. Many State officials are not sure they would even be notified of an emergency at a nuclear facility. Our survey of State emergency response officials showed that about two-thirds of the States with DOD nuclear facilities were uncertain whether they would be notified of a radiological emergency. The uncertainty around NRC and DOE facilities was less pronounced, as only one State with NRC-regulated facilities, and one with DOE facilities responded negatively. However, some doubt was still evident in that three States with NRC-regulated facilities and five with DOE facilities indicated that their confidence in notification was only borderline.

Delays in notifying State and local officials of a nuclear incident in 1978 support the doubts expressed by some State officials. During an incident involving a reactor in Colorado, part of the facility was evacuated as a result of projected radiological hazards before any State or local official was notified. When facility operators finally notified State and local officials about the emergency, they provided them inaccurate meteorological data which resulted in some State and local authorities positioning themselves in a potentially hazardous area. Fortunately, this incident did not result in a serious radiological hazard.

In our opinion, the main contributor to breakdowns such as this is the inadequate testing of offsite communication links. At most DOD and DOE exercises, we found that the offsite notification test stopped after telephone numbers had been checked and the ability to establish radio or telephone contact with offsite authorities listed in the emergency plans had been demonstrated. The facilities generally did not require a demonstration of the ability to communicate meaningful and accurate information in a timely manner.

Most of the nuclear powerplants we visited performed annual simulated drills that tested offsite notification speed and message content as well as the ability to contact offsite emergency authorities. Where this type of testing has been done, communication blocks or weaknesses between a facility and offsite authorities have been identified, and some corrective actions have been taken. These communication weaknesses are significant when one considers that these tests were planned and announced well in advance, and all emergency personnel were prepared for participation.

Although improved notification procedures and more reliable communications links may result in a prompt and accurate flow of information, they do not guarantee that the public will be protected. Public health and safety will be protected only to the extent of State and local authorities' capability of carrying out required protective actions in a timely manner. As shown in the next chapters, in many cases State and local authorities' ability to effectively respond is doubtful.

CHAPTER 3

LIMITED ROLE OF STATES IN INITIAL RESPONSE TO NUCLEAR EMERGENCIES

Nuclear facilities rely on State and local governments for responding to offsite emergencies and initiating protective measures. State and local governments are not required to have nuclear emergency plans, but NRC is supposed to encourage and assist State and local authorities to develop such plans. In the past, NRC has primarily directed its efforts at the State level. However, the States' emergency response activities are primarily related to the restoration or recovery phase of an emergency, and only secondarily address initial-response or public protective action. For the most part, immediate offsite emergency response actions must be taken by local government authorities.

ASSISTANCE TO STATES FROM NRC

NRC has the primary responsibility for assisting State and local governments in developing emergency response plans for radiological releases from nuclear facilities. NRC provides guidance and assistance to States preparing nuclear emergency plans, and formally reviews State plans. When NRC is satisfied that a plan meets all the essential planning elements, it issues a formal letter of concurrence with the plan. NRC's review and concurrence is a cooperative, nonstatutory relationship with State governments; NRC has no authority to either require States to develop plans or disapprove State plans.

In December 1974 the Atomic Energy Commission (AEC) 1/ issued its "Guide and Checklist for Development and Evaluation of State and Local Government Radiological Emergency Response Plans in Support of Fixed Nuclear Facilities" (NUREG 75/111). The document has served as NRC's standard for reviewing and concurring with State plans. It was intended to provide State and local governments with planning guidance for accidents at any type of fixed nuclear facility--nuclear powerplants, reactor fuel-reprocessing plants, test and research reactors, and other facilities using or producing large quantities of radioactive material. However, it was targeted primarily to State planning needs in connection with licensed nuclear powerplants. NRC's focus on nuclear

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1/NRC was formerly a part of AEC.

powerplants was quite evident in the nuclear emergency-planning efforts of the seven States we visited which had plans. Only one of these States addressed nuclear facilities other than commercial power reactors in its plan.

NRC also offers training to State and local emergency personnel. NRC and several other Federal agencies are sponsoring a training course in radiological emergency-response planning for State and local government emergency planning personnel. At the present time, NRC is offering State and local officials courses in radiological emergency response operations and radiation assessment. So far, over 1,000 State and local personnel have participated in NRC's training program. About 65 percent of the participants have been from State government and 35 percent from local government.

Federal reorganization of emergency services

The Federal Emergency Management Agency (FEMA), established by the President's Reorganization Plan No. 3 of 1978, will come into being sometime before April 1, 1979. The new agency will bring together the three Federal agencies that currently have the major responsibilities for peacetime and wartime emergency planning. 1/ This new agency is to serve as a single point of contact for State and local governments for Federal emergency planning and preparedness.

Under the President's reorganization plan establishing FEMA, however, the new agency does not automatically assume the primary policymaking and coordination role for radiological emergency-response planning. NRC will retain its responsibilities for assisting State and local governments to develop plans for responding to radiological emergencies around nuclear facilities, unless FEMA assumes this responsibility through administrative actions. Under authority delegated by the President, the General Services Administration (GSA) assigned NRC its responsibilities in a Federal Register Notice, dated December 24, 1975. According to GSA, FEMA may rescind this Federal Register Notice and assume the leadership and coordination of emergency-response planning for nuclear accidents.

1/The Federal Preparedness Agency (FPA), the Defense Civil Preparedness Agency (DCPA), and the Federal Disaster Assistance Administration (FDAA).

NUCLEAR POWERPLANTS CAN BE OPERATED WITHOUT NRC CONCURRENCE IN STATE PLANS

During 1975 and 1976, NRC did not concur with any State plans it reviewed. According to Federal and State officials, the lack of concurrence with State plans was due to the unreasonably large number of planning elements in the Guide and Checklist, NRC used as its standard for review. The Guide and Checklist contained 154 guidance elements which State plans had to meet to obtain NRC concurrence.

With the help of Federal, State, and local government agencies, NRC attempted to better identify the planning elements that were essential to radiological emergencies. In March 1977, NRC published a curtailed list of 70 elements that now represent NRC's standard for concurrence. Since the new list was established, NRC has had 20 State plans under review, but has concurred with half of them.

NRC's concurrence with 10 plans represents an improvement over earlier review and concurrence efforts. But most States still do not have radiological emergency plans concurred in by NRC, and some have not even submitted plans for review.

Eighteen States whose plans have not received NRC concurrence have NRC-licensed power reactors. Forty percent of the NRC-licensed nuclear power reactors are located in 10 States whose emergency response plans have not been reviewed by NRC.

NRC's review and concurrence program for State radiological emergency plans is not part of the nuclear powerplant licensing process. However, NRC licensing officials do review State and local emergency plans submitted by utilities requesting licenses.

Licensing officials told us that in evaluating State and local emergency response plans for licensing purposes, they look at the local capability to evacuate or shelter people in the event of an emergency. According to them, their major concern is seeing that the notification and decision process has been established and that a system exists for classifying the various types of radiological emergencies.

In addition to evaluating State and local emergency planning, the NRC licensing group also receives reports on State and nuclear emergency-response capabilities from the NRC office responsible for reviewing and concurring with State plans. NRC started this reporting procedure in March 1977. We reviewed the five reports prepared so far and

believe they lack sufficient depth and specificity to provide a meaningful assessment of State response capabilities.

NRC believes its current licensing procedures provide adequate assurance that nuclear powerplants can be operated without undue risk to public health and safety. According to NRC, it protects public health and safety by giving primary consideration to site characteristics and design features of nuclear facilities. Once NRC is satisfied that these meet an adequate measure of safety, it evaluates a facility's emergency plans.

NRC's position is that State and local emergency plans provide an added margin of protection for the public in the vicinity of a nuclear facility where the Commission believes an adequate measure of safety already exists. In addition, the Commission believes that experience with other types of disasters has shown that public officials are capable of dealing with emergencies in their communities and that, historically, State and local officials have been able to contend with all sorts of emergencies.

However, despite NRC's licensing review, it has identified weaknesses in State and local response capabilities for those full-scale drills which have been held at nuclear powerplants with State and local participation. Weaknesses have been identified which we believe could adversely affect State and local capabilities to protect public health and safety.

We agree that NRC's licensing review provides a high degree of assurance that serious accidents will not occur. Even so, we believe that all aspects of emergency preparedness should be resolved before nuclear powerplants begin operation. We believe that the public expects NRC to adequately evaluate all safety areas, including emergency response planning before allowing nuclear powerplants to operate. Therefore, we believe NRC should license powerplants only where State and local emergency plans meet all its essential planning elements. NRC should also require license applicants to make agreements with State and local agencies assuring their full participation in annual drills over the life of the facility.

STATE PLANNING AND PREPAREDNESS

To obtain a comprehensive picture of the status of peacetime nuclear emergency planning and preparedness at the State level, we sent questionnaires to all 50 States, the District of Columbia, and the Commonwealth of Puerto

Rico. 1/ The questionnaire requested States to assess their current preparedness for dealing with peacetime nuclear emergencies. All States responded to the questionnaire.

Forty-one of the States said they had plans for responding to a peacetime nuclear accident, and another 5 States indicated that they were either developing plans or planned to do so. The other six States said they did not need a plan because there were no nuclear facilities in or near their State. It is interesting to note, however, that some of the States responding that "no nuclear facilities were located in or near the State," actually had classified military nuclear facilities located within their boundaries.

All States with NRC and DOE facilities have developed or were planning to develop nuclear emergency plans. States with military nuclear installations were less inclined to plan for such contingencies, and some did not have plans.

A majority (about 57 percent) of the States believed that they were prepared for a peacetime nuclear emergency. Twenty-seven percent of the States indicated that their preparedness was borderline; sixteen percent said that they were unprepared. None of the 26 States with NRC-licensed powerplants considered themselves unprepared, although about one-quarter rated their preparedness as borderline. Of the 15 States with major DOE nuclear facilities, 8 said they were prepared, 5 borderline, and 2 unprepared. About half of the States with DOD nuclear weapon facilities considered themselves prepared, one-third borderline, and the rest unprepared. Most of the States (90 percent) said that they expected an increase in nuclear emergency preparedness over the next 10 years.

While many States believed that their resources for responding to a peacetime nuclear emergency were adequate, as shown in the table on the next page, a large number of the States indicated that their equipment and communication facilities were either borderline or inadequate.

1/Although the District of Columbia and the Commonwealth of Puerto Rico responded to our questionnaire, for the purposes of this report we refer to all respondents as States.

States' Assessment of Their Resources for

Responding to Peacetime Nuclear Emergency

	Adequate	Borderline	Inadequate
	(percent)		
Equipment	48	23	29
Trained personnel	52	31	17
Emergency operations center	77	8	15
Communications facilities	52	25	23

While most States indicated a high level of nuclear emergency preparedness, many also indicated that they had not tested their preparedness. Only 9 of the 41 States with nuclear emergency plans said that they had tested their plans with full-scale drills. Sixteen States indicated that they had held practice drills involving some but not all the people who would be expected to respond during a real emergency. The remaining 16 said that they had not tested the adequacy of their plans or resources.

Based on the problems identified with those plans that have been tested, we believe there is little assurance that an untested plan will actually work in a real emergency situation. In a peacetime nuclear emergency, States have primary or lead responsibility during the long-term or restoration phase, but play a secondary role during the initial emergency phase. The role of State agencies is limited during the initial emergency phase because, generally, their emergency resources and personnel are located too far from fixed nuclear facility to initiate immediate protective measures for safeguarding the public. Thus, responsibility for initial response rests with local authorities. They are responsible for protecting health and safety within their jursidiction, are closest to the accident site, and would be expected to initiate protective measures. During the initial emergency phase, the State's role is usually limited to providing support and assistance to local efforts for safeguarding the public.

CHAPTER 4

EMERGENCY PREPAREDNESS AT THE LOCAL LEVEL

There are two reasons why communities in the vicinity of federally owned or regulated nuclear facilities may not be prepared to respond effectively to a peacetime nuclear emergency.

--First, local authorities are not always informed by the Federal agency or the nuclear facilities of the potential radiological hazard that could endanger public health and safety, nor are local authorities always informed of their expected role in responding to a nuclear emergency.

--Second, local nuclear emergency preparedness is not being tested or checked to assure its effectiveness.

As a result, there is little or no assurance that the health and safety of the public would be protected.

Since communities in the vicinity of nuclear powerplants and installations would be the first to receive any offsite radiological release, they are basically responsible for implementing the first line of defense. This may include monitoring and assessing the radiological release and implementing necessary protective measures. Thus, local authorities have a vital role in performing emergency measures for safeguarding the public. Local authorities, however, are not always prepared to handle such emergencies.

EMERGENCY-PLANNING ZONES AROUND NUCLEAR FACILITIES NEED TO BE INCREASED

Local authorities involved in emergency preparedness activities around NRC-licensed powerplants have used NRC's criteria 1/ for developing emergency plans and NRC's Reactor Siting Criteria 2/ for determining the immediate area surrounding a powerplant, called "low population zones" (LPZs) that may need protective action in the event of a nuclear accident involving an offsite release.

1/10 CFR, Part 50, App. E.

2/10 CFR, Part 100.

The term LPZ is somewhat misleading because such zones are not solely determined by population considerations. LPZs are derived in part by estimating the area around a nuclear facility where NRC-prescribed radiation dose limits could be exceeded during certain types of accidents. The accidents used to establish LPZs, however, do not include the most severe types of nuclear accidents. As a result, these zones do not cover the entire area that could be affected by such a release. In addition, LPZs are based on radiation dose levels that are developed for siting purposes and which were never intended to constitute acceptable levels of radiation exposure to the public during an emergency. For example, NRC radiation dose levels for determining LPZs are five times higher than the levels EPA believes may warrant actions to protect public health and safety. As a result, nuclear emergency plans and procedures developed on the basis of such criteria are not adequate in overall coverage to comply with the recommendations of EPA's protective action guides.

Based on the siting criteria, the LPZs surrounding NRC powerplants are generally within 5 miles of the nuclear reactor and do not include the entire area that could be affected by a nuclear release. For example, some of the postulated accidents used for siting the reactor could exceed the radiation dose levels prescribed by EPA for protective actions. In additon, NRC's 1975 Rasmussen Reactor Safety Study described a nuclear accident with serious consequences ranging up to 50 miles from the powerplant.

Since publication of the Reactor Safety Study, the Federal, State, and local personnel involved in emergency-preparedness activities have been taking a hard look at NRC's criteria for developing emergency plans. In 1976 NRC and EPA established a task force to review the planning basis for off-site organization preparedness around NRC-licensed nuclear power reactors. In a report, dated November 1978, the task force acknowledged that nuclear emergency planning could not be based on the most severe type of nuclear accident, but recommended establishing a protective zone of about 10 miles in radius for initiating immediate emergency actions, such as an evacuation. 1/ The task force believes that this distance should be large enough to assure that the lower values of EPA's Protective Action Guidelines (PAGs) are not exceeded

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1/Planning Basis for the Development of State and Local Government, Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants, NUREG-0396, November 1978.

outside the planning area as a result of certain types of postulated accidents. It also believes that this is the most likely area in which protective action might have to be taken for releases larger than those associated with design-basis accidents.

LOCAL AUTHORITIES NEED TO BE INFORMED

Although local authorities will be the first to respond to a nuclear accident, generally they do not have the expertise or capabilities to fully determine the potential radiological hazards that exist at nuclear facilities. Basically, local authorities are dependent on Federal agencies to provide them with such information. NRC, DOE, and DOD, however, have not always informed or advised local authorities of the full radiological hazard that exists at their facilities or of the expected role local authorities would play in responding to a peacetime nuclear emergency.

We believe that offsite organizations having nuclear emergency responsibilities should be fully informed or advised of the potential hazards and consequences associated with all nuclear accidents. For example, a community located within 6 miles of an NRC-licensed powerplant did not have any emergency response plans or procedures for coping with a nuclear release. Local authorities told us that no one had informed or advised them that they needed nuclear emergency procedures or that the nuclear powerplant could be a potential problem to their community.

Local communities in the vicinity of NRC-licensed powerplants are not alone when it comes to not being fully informed of the potential radiological threat or hazard; communities in the vicinity of DOE and DOD nuclear sites were generally less informed. Basically, DOE and DOD officials hold the position that their nuclear operations and activities do not pose a threat to the health and safety of the general public. DOE officials said that their facilities are constructed so that accidents resulting in an offsite radiological release would not exceed NRC's criteria for licensed power reactors. DOD officials said that a nuclear accident at one of their installations would be confined within the site's boundaries and pose no problem to local residents. In both cases, DOE and DOD officials said there was little or no potential radiological hazard to local communities in the vicinity of their nuclear operations or activities.

DOE and DOD nuclear activities, however, may pose a greater radiological threat to local communities than these agencies claim. For example, DOE facilities are constructed so that an accidental radiological release would not exceed NRC's criteria for licensed power reactors. As discussed earlier, the radiation dose levels established in NRC's Siting Criteria are not intended to constitute acceptable levels for emergency action to protect the public. NRC radiation dose levels for the LPZ are five times higher than the levels prescribed by EPA for protective action. DOE officials said that they were aware that NRC's criteria and EPA's protective action guidelines differed and that some of their postulated accidents could exceed EPA guidelines at the boundary of their facilities.

DOD nuclear installation officials said that the probability of a nuclear accident occurring at one of their sites is very low and if an accident did occur, the resulting radiological hazard would not be expected to go outside their facilities. We agree that the likelihood of a nuclear accident occurring at a military installation is low. However, if an accident did occur, the radiological release might not be entirely confined within the boundaries of the site. For example, we developed an accident scenario for a DOD weapon installation which would provide a reasonable estimate of the potential hazard generated by a nuclear accident and the area that it would affect.

Our accident scenario involves a hypothetical weapon. The accident happens while the weapon is on a hard concrete surface and occurs under adverse meterological conditions. In real life, such an accident could occur while a weapon was being moved from one location to another, within a military installation, or being loaded into an airplane. After detonation, a portion of the plutonium would remain in the immediate area and the rest would become airborne, to be carried downwind from the accident scene.

Based on this scenario, DOE's Lawrence Livermore Laboratory calculated, at our request, the individual dose and contamination levels to people and property. (The chief hazard to humans from such an accident is inhalation of excessive amounts of airborne plutonium particles.) Their evaluation showed that such an accident would create a radiological cigar-shaped cloud extending from the accident scene for about 28 miles, with a maximum width of about 2.5 miles. Lawrence Livermore's evaluation also showed that individuals located under the cloud could receive lung doses equal to or greater than the proposed EPA limits for plutonium inhalation.

This scenario may represent the worst possible consequence for the amount of nuclear material involved. Changes in meteorological conditions, more rugged terrain, and the decreased intensity and duration of the explosion would diminish the impact area. However, in nearly all cases, the dispersal of hazardous levels of plutonium would be expected to go beyond the installation boundary.

Neither DOE nor DOD officials have fully informed local authorities of the potential hazard that exists at their facilities or the expected emergency response role that local authorities would play. DOE officials said that although they were aware of the difference between NRC and EPA dose-level criteria, they had not informed local authorities of this difference nor advised them of what emergency action might be necessary if such an accident occurred. DOD installation officials said that they were not allowed to inform offsite authorities because of DOE's security policy which states: "installation commanders can neither confirm nor deny the presence" of nuclear materials. Installation officials believed that by informing local authorities of their nuclear capabilities, national security would be jeopardized. Installation officials were also concerned that the disclosure of nuclear weapons would unnecessarily raise public fear and possibly create a target for protest or terrorist activities.

We recognize the need to maintain the national security by not identifying the location of some strategic nuclear installations. However, it appears that the location of many installations is public knowledge. For example, at one nuclear installation we visited, the facility operators publicly distributed literature about the "nuclear deterrent force" stationed at the site. However, while some of the facility's nuclear capability appeared to be public knowledge, the installation had not formally established a relationship with offsite authorities to deal with a nuclear emergency. We believe that national security would not be jeopardized by establishing a relationship between the installation and local authorities for response to a nuclear emergency. Rather, it may create a coordinated emergency effort for coping with a potential hazard that could threaten public health and safety.

LACK OF LOCAL PLANNING AROUND DOE AND DOD FACILITIES

While communities near NRC facilities have attempted to plan for nuclear emergencies, it appears that very little effort has been expended in nuclear emergency preparedness at the local level in the vicinity of DOE and DOD nuclear

facilities. Only three of the eight local communities we contacted in the vicinity of DOE facilities had a specific plan for responding to a nuclear emergency at the facility. However, two of the communities had developed their nuclear emergency plans for commercial nuclear powerplants under construction at a DOE installation. Local officials said they had not previously had plans or procedures for coping with a nuclear accident at the DOE site. An official from another community said that his community was in the process of developing an emergency plan for DOE incidents, but at present had only an evacuation plan which has not been tested. General emergency response plans of three other communities state that these plans may be used to respond to a nuclear emergency at a DOE facility but do not go into detail on specific actions to be taken in the event of such an emergency. An official of the remaining community said that its general emergency plan did not address emergencies at the DOE facility, but he believed it could be adapted to nuclear emergencies. For the most part, local authorities contacted in the vicinity of DOE facilities said that they did not consider the site to be much of a threat. Some local officials said that they have worked or are working at the site, and they do not see any significant hazard posed to the community by the site's activities. Other local authorities said that the county populace is located far enough away from the site that releases from the site were of little concern. DOE officials, however, have not informed local authorities that some of DOE's postulated accidents could exceed EPA's protective action guidelines, a circumstance which may require local authorities to implement protective measures.

Neither of the communities contacted in the vicinity of DOD nuclear installations had specific plans and procedures for coping with a nuclear accident.

LOCAL EMERGENCY PREPAREDNESS SHOULD BE TESTED PERIODICALLY

Local nuclear emergency preparedness is not always tested to assure that local authorities can respond to a peacetime nuclear accident effectively. As a result, there appears to be inadequate assurance that the public could be protected from a serious nuclear release.

As indicated earlier, NRC, DOE, and DOD facilities are required to develop plans and procedures for handling any type of radiological emergency that would remain within the boundaries of their facilities, but they have no statutory authority to implement protective measures beyond the site's boundaries. These three agencies rely on local authorities

to implement protective measures for safeguarding the public from any radiological release that goes offsite.

All of the 10 communities we contacted in the vicinity of DOE and DOD nuclear sites had general emergency plans, but only 3 had detailed plans for nuclear emergencies. One community had recently tested its procedures for responding to a general emergency. None of the others had tested its emergency plans within the last 15 years. None of the 10 communities contacted had ever tested or participated in a nuclear emergency drill held at DOE and DOD facilities.

We believe that testing or checking offsite nuclear emergency procedures is important for assuring that the health and safety of the public could be protected should a serious radiological release occur. Our review showed that while some local authorities in the vicinity of NRC powerplants were generally prepared for handling nuclear emergencies, others were not. For example, neither the State nor local emergency service agency near one NRC nuclear facility had plans which considered evacuation, even though this procedure was identified by facility operators as the primary offsite emergency protective measure. Local officials in another community were confused about what they should do because the key official for coordinating and initiating nuclear emergency measures was in the hospital undergoing an operation.

We believe that testing emergency procedures with offsite participation would improve State and local emergency preparedness. For example, some NRC-licensed powerplants have held emergency drills with offsite participation. The types of deficiencies identified during these drills included

--inadequate communication between the various agencies participating in the drill,

--confusion regarding responsibility and authority for coordinating and implementing emergency measures, and

--inadequate offsite radiological monitoring procedures.

We believe it is better to identify problems in an emergency drill rather than wait until the actual event occurs. Also, by holding nuclear emergency drills, NRC-licensed powerplants and local emergency service agencies have been able to resolve some of the problems that were identified.

Several local authorities in the vicinity of DOE and DOD nuclear sites believe that their existing general emergency

procedures could be used or adapted for a nuclear situation. We tend to agree with this, but we believe that the time element for responding to a nuclear emergency is a vital factor and that general emergency preparedness may not always be adequate for safeguarding the public from a serious radiological release. We believe that local authorities should be fully cognizant of the potential hazards that exist at federally owned or regulated nuclear facilities and be fully informed or advised of the expected role they would play in safeguarding the public from radiological hazards. In addition, we believe that local emergency preparedness should be periodically tested in concert with the nearby nuclear facility.

CHAPTER 5

PUBLIC PREPAREDNESS: LIMITED KNOWLEDGE, UNKNOWN RESPONSE

The success of all emergency planning depends on public reaction to the information and directions provided if a radiological release at a fixed nuclear facility threatened public health and safety. It can be expected that the public's response will be no better than its understanding of the hazards and its preparedness to perform recommended protective actions promptly and in good order.

There does not appear to be a Federal policy on providing nuclear accident response information to the general public. We found that people living in areas near fixed nuclear facilities were not well informed about the potential hazards or the actions that might be necessary to avoid or minimize exposure. While some local emergency agencies have attempted to encourage dispensing this type of information, public interest has not been great. In addition, facility operators have discouraged efforts to inform the public.

The Federal response to this lack of direction has generally been to discount the need for the distribution of public information. Federal agencies have not required facility operators to include public information as part of their emergency plan except for details on when and how post-accident public information should be presented.

We believe that a serious weakness in assuring the overall preparedness of nuclear emergency-response planning results from the absence of some requirement for public information about the (1) potential hazards present at nuclear facilities, (2) emergency response required to cope with a nuclear emergency, and (3) protective measures that can be taken to minimize or avoid public health effects. In an emergency, the public's response is critical. Without some prior knowledge of what to expect and what to do, the public may not react quickly or as cooperatively as the situation demands. Dissemination of such information would require a coordinated effort on the part of Federal, State, and local authorities.

FACILITY EFFORTS TO INFORM PUBLIC HAVE NOT BEEN ADEQUATE

At the five NRC-licensed powerplants visited, powerplant officials had provided some general public information concerning public health hazards and protective actions at public

meetings called during the NRC powerplant-licensing process. However, these meetings were held 2 or more years before the facilities started operating, and local government officials stated that facility operators have not taken any further action to educate the public. Local government officials near DOD and DOE facilities were not aware of any specific facility attempts to disseminate information to the general public about the radiological hazards or protective actions that can be taken.

Facility operators did not appear concerned about the lack of information made available to the public. This reflects the attitude of most operators, namely, that there is little danger to the public from their facilities. This attitude was summarized by one operator who said that he did not expect serious accidents requiring large-scale public involvement to occur and that prompt notification and normal local offsite emergency response actions would receive total public cooperation if a nuclear emergency did occur.

In most cases, the operator's confidence in public cooperation has not been put to the test, even on a limited scale, to determine its validity. As discussed in chapters 2 and 4, at DOD and DOE facilities, simulated tests of offsite emergency activities generally are limited to checking communication equipment, while NRC facilities sometimes involve local emergency authorities in response actions. Seldom is the public informed of or involved in these simulated exercises; only at one NRC facility we visited did we find any effort to involve and observe public action. At this facility, public evacuation of an area was recommended, and in lieu of actually moving from their homes, public information bulletins describing the exercise and the actions that might be recommended in a real emergency were distributed to about 1,000 residents.

NEED FOR FEDERAL POLICY

Federal responsibility to provide the public with an understanding of the potential hazard or emergency actions that may be necessary around nuclear facilities is clearly not identified. The lack of policy on public information is most readily demonstrated in the Federal Register Notice, issued by FPA on December 24, 1975. It states the responsibilities of Federal agencies for radiological emergency-response planning. In the notice, neither NRC, which has the primary responsibility in radiological emergency planning, training, and assistance activities; FPA, which exercises general monitorship of Federal radiological emergency activities; nor any other Federal agencies were assigned responsibility for seeing to it that the States were providing information

to the general public so that it is aware of the threat of a nuclear accident or appropriate response to it.

STATE AND LOCAL EFFORTS

Some local government officials have made attempts to advise the public on what to do in case of a nuclear emergency at fixed facilities in their jurisdictions. Local government public information efforts are noticeable only around NRC facilities. At some of the NRC facilities we visited, local emergency authorities had held open public information meetings addressing radiological hazards and protective measures. In addition, during drills of local nuclear emergency-response capabilities, these authorities sometimes contacted citizens in the simulated hazard area, informed them of the nature of the exercise, and advised them of the actions that would be taken in an actual situation. However, public meetings have been discontinued because of poor public attendance or financial limitations, and the information distributed during exercise drills was limited to small targeted population groups and not to all the people who could be affected if an actual accident occurred.

At DOD and DOE locations we visited, community authorities had not provided any general information to the public about hazards of fixed nuclear facilities or public response. Most of these authorities had not received this information themselves. However, at two locations--one DOE and one DOD--local authorities had tested their emergency capabilities to cope with nuclear material transportation accidents. In the process, some public information was distributed. These tests and the information distributed did not, however, address the potential hazards or public response which would be needed if an accident occurred at the nearby nuclear facility.

INCREASED EFFORTS TO INFORM PUBLIC HAVE BEEN DISCOURAGED BY FACILITY OPERATORS

Until recently, facility operators, State and local government emergency authorities, and the public have not been concerned about the lack of nuclear emergency information available. It appears that this attitude is being reexamined by local authorities and the public because the media have called their attention to the potential hazards of nuclear material. At one location we visited, local officials were working on integrating a public information program on radiological emergencies with a crime prevention program presented to citizen groups in the area. At another location, local authorities told us they had asked the operator of a nearby commercial nuclear powerplant to include

information in the utility bills to its customers on what to do in the event of a nuclear accident. According to local authorities the facility was cooperating with them in developing such information.

However, at several other locations we visited, facilities' operators were reluctant to provide public information for fear of creating public alarm that could result in new or prolonged current protest activities. In one instance, a State request for the distribution of information through the billing system was rejected by one utility after a particularly heated public debate over the siting of a new facility. State officials told us that the utility was afraid that such information would result in further debate, which the utility wanted to avoid.

The question or threat of public debate should not prevent the distribution of emergency information. In the case of an accident, this information would be important for public safety. We believe that all fixed nuclear facilities represent some potential threat that may require quick responsive action by the public to avoid or minimize the hazard to health and safety.

Some disasters can be predicted in advance by seasonal changes or observations, and emergency information can be provided to the potentially affected public, days or hours in advance. In contrast, the warning time for nuclear emergencies may be short. Therefore, it is important that people living around nuclear facilities be fully informed of what to do in case of a nuclear accident so that they can respond quickly.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

While the probability of significant radiological releases from a nuclear accident may be remote, it nevertheless remains a possibility. In many cases, there will be no advance warning of such accidents, and time for action will be short. Thus, actions to control an accident, assess the extent of a hazard, and initiate the notification and movement of the public from an affected area must be carried out promptly and expertly to minimize exposure. For this reason, a high degree of planning and preparedness must exist among all the organizations charged with emergency responsibilities to assure adequate public protection.

Presently, there is only limited assurance that the people near most fixed nuclear facilities will be adequately protected from the radiological consequences of a serious nuclear accident. While this does not mean that public protective measures will not be carried out in a nuclear emergency, it does cast serious doubt on the preparedness and capabilities of some emergency response authorities to adequately perform the activities necessary to protect the public. As a result, the public-health impact of such accidents may be much greater than need be.

For the most part, NRC, DOE, and DOD are carrying out activities to prepare for onsite emergencies. To this end, these organizations have required facility operators to develop onsite emergency plans, procedures, and capabilities for coping with nuclear emergencies. Required periodic testing of nuclear facility response to simulated emergencies has indicated a high degree of preparedness for performing onsite emergency functions.

Only at DOE facilities did we find a serious weakness in testing emergency-response capabilities. DOE facilities did not use realistic accident situations in their simulated tests of emergency response nor did they test emergency response on a site-wide basis. In our opinion, DOE's test procedures do not adequately demonstrate a facility's preparedness to cope with a nuclear emergency.

We believe that radiological emergencies could reasonably be expected to affect more than one activity at a facility requiring a facility-wide response. Problems in testing at the facility level may be related to the fact that DOE headquarters divisions review only those emergency-planning activities that relate to their particular areas of interest. We believe that reviewing the plans of individual activities

within a facility rather than the facility plans as a whole increases the potential for gaps in emergency response planning and public protection.

While most facilities appear prepared to respond adequately to an onsite nuclear emergency, this does not mean that the public will be adequately protected. Generally, facility emergency preparedness and responsibility is confined to the boundaries of the installation. Facility plans address only control and assessment of the radiological hazard, and the notification to authorities of State and local governments that a potential health hazard exists.

Because the facility response is primarily limited to the installation, it is important that the responsible Federal organizations and facility operators assure that offsite emergency authorities will be contacted and that accurate information be passed on. It appears that only at NRC facilities is this offsite link being adequately tested. These tests, however, have surfaced problems which could prevent adequate emergency response. At DOD and DOE facilities, only the mechanical existence of the link is being checked, which we do not believe is sufficient. A more thorough test is required, similar to NRC, where drills that test notification speed and message accuracy are performed.

While better testing will improve facility notification procedures and offsite communication links, this alone does not mean that the public will be adequately protected. Authority for protective action beyond the site boundary is vested in State and local governments. Facility operators may recommend protective actions, but they do not have the authority to initiate or direct such actions. The public will be adequately protected only if State and local authorities can carry out these recommended protective actions.

Federal organizations and facility operators are relying on State and local governments to perform offsite emergency and protective measures in the event an accidental release threatens the public. However, there is considerable doubt as to the preparedness of these authorities to respond.

NRC reviews State emergency plans to determine whether they meet what NRC considers to be essential planning elements. While most States have developed nuclear emergency plans, NRC only concurred with eight of them. Most plans do not address potential response actions for DOD and DOE facilities, and NRC's review and concurrence program is not part of the licensing process. The public should be assured that the capabilities to respond to nuclear emergencies actually exist before NRC allows nuclear powerplants to operate. We

do not believe that emergency preparedness should be left until after nuclear powerplants have already begun operation. NRC's approach in this area reminds us of the proverb about "putting the cart before the horse." Emergency readiness must be assured before putting reactors into operation, not after.

Local emergency planning efforts provide an even dimmer picture of preparedness. Only at NRC facilities did we consistently find local nuclear emergency plans. However, these plans were limited. They did not always reflect the total area that could be affected by a nuclear emergency. At DOD and DOE facilities we found, for the most part, only general emergency plans that could be adapted to a nuclear emergency. The reasons for this lack of adequate planning appear rooted in the different approaches to local planning taken by NRC, DOE, and DOD.

NRC's criteria for determining emergency-planning areas do not consider the more serious types of accidents that could occur and do not consider the public exposure levels that may require some protective action.

DOE does not believe its facilities present a potential threat to the public, thus local emergency planning has not been pursued.

DOD has not encouraged the establishment of local emergency planning at all because it does not believe that an offsite threat exists, and it believes the establishment of such plans may compromise the security of nuclear weapons' storage locations.

At all facilities we visited, we found that credible nuclear accidents had the potential for causing releases that could threaten public health and safety at considerable distances from the facility boundaries. We believe that this threat requires, at a minimum, that the local officials who are responsible for initiating protective measures be advised of the potential hazard, the most likely hazard area, and recommended actions that should be taken to protect the public. Operators should also encourage local participation in emergency drills at least annually. Only when there is some level of demonstration that local agencies are prepared and able to respond will there be sufficient assurance that the public will be adequately protected.

FEMA is being established to bring together the three Federal agencies that currently have the major responsibilities for both peacetime and wartime emergency planning. This new agency is to serve as a single point of contact

for State and local governments for emergency planning and preparedness activities. A major exception is peacetime radiological emergency response planning. NRC will retain this delegated authority unless FEMA withdraws it.

We recognize that NRC has an important role in radiological emergency-response planning around commercial nuclear facilities because of the close tie between licensee and State and local emergency planning. However, we believe that as the focal point for Federal emergency-planning and preparedness activities, FEMA--not NRC--should make policy and coordinate radiological emergency response planning as a part of its overall emergency planning and preparedness.

RECOMMENDATION TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION; THE SECRETARY OF DEFENSE; AND THE SECRETARY OF ENERGY

We recommend that the Chairman, Nuclear Regulatory Commission, and the Secretaries of Defense and Energy:

--To the extent that national security is not jeopardized, require that the people living near nuclear facilities be provided with information about the potential hazard, the emergency actions planned, and what to do in the event of an accidental radiological release.

RECOMMENDATION TO THE DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY

We recommend that the Director, Federal Emergency Management Agency:

--Assume the responsibility for making policy and coordinating radiological emergency response planning around nuclear facilities. The Director should broaden radiological emergency-planning assistance to State and local governments around DOD and DOE facilities that have a potential nuclear hazard comparable to commercial powerplants.

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

We recommend that the Chairman, Nuclear Regulatory Commission:

--Allow nuclear powerplants to begin operation only where State and local emergency-response plans meet all of NRC's essential planning elements. In addition,

NRC should require license applicants to make agreements with State and local agencies assuring their full participation in annual emergency drills over the life of the facility.

--Establish an emergency-planning zone of about 10 miles around all nuclear powerplants as recommended by the Environmental Protection Agency/Nuclear Regulatory Commission task force, and require licensees to modify their emergency plans accordingly.

RECOMMENDATION TO THE SECRETARIES OF DEFENSE AND ENERGY

We recommend that the Secretaries of Defense and Energy:

--Require facility commanders at unclassified DOD facilities and DOE facility operators to develop formal and explicit agreements with the State and local government agencies having emergency responsibilities. These agreements should clearly delineate the roles, responsibilities, and capabilities of each part in the event of an offsite radiological emergency. They should also include provisions that the State and local emergency response agencies will be encouraged to participate in annual drills with the facilities.

RECOMMENDATION TO THE SECRETARY OF DEFENSE

We recommend that the Secretary of Defense:

--Develop methods of interacting with States in peacetime nuclear emergency-response planning where the classification of its nuclear facilities is justified on national security grounds. For example, DOD could deal with a few key State or local officials on a classified basis. Another alternative would be to establish emergency notification procedures and arrangements with all State and local jurisdictions where military installations either have, or have the potential for, nuclear capabilities without confirming or denying the existence of nuclear materials.

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

We recommend that the Secretary of Energy:

--Require the major nuclear materials production and research reservations under DOE control to perform

radiological emergency response drills at least annually. These drills should be comprehensive (site-wide) and should test the emergency-response plans against simulated accident conditions that are realistic.

--Require a periodic complete headquarters' review of each facility's emergency plans at least every 2 years.

EPA GUIDELINES FOR RADIOLOGICAL EMERGENCY RESPONSE

Projected exposure dose (rem) to the population	Recommended actions (note a)	Comments
Whole body - 1 Thyroid - 5	1. No protective action required. 2. State may issue an advisory to seek shelter and await fur- instructions or to volun- tarily evacuate. 3. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Whole body - 1 to 5 Thyroid - 5 to 25	1. Seek shelter and wait further instructions. 2. Consider evacuation partic- ularly for childern and pregnant women. 3. Monitor environmental radiation levels. 4. Control access.	
Whole body - 5 and above Thyroid - 25 and above	1. Conduct mandatory evacuation of populations in the pre- determined area. 2. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. 3. Control access.	Seeking shelter would be an alternative if evacuation were not immediately possible.

a/These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take into consideration the impact of existing constraints.

APPENDIX I

 APPENDIX II

COMPARISON OF EMERGENCY RESPONSE PLANNING AND CAPABILITY AT AND NEAR NUCLEAR FACILITIES

(by agency)

FACILITY PREPAREDNESS

Onsite

NRC	DOE	DOD
Highly developed response capability.	Fragmented approach to emergency planning and testing.	Highly developed response capability.
Plan tested annually.	Site-wide drills are not performed. Rather, each activity or operation performs drills separately, at least annually.	Plan tested at least annually.
Announced simulated drills.	Some plans are not tested under conditions which simulate realistic emergency situations.	Unannounced simulated drills.

Offsite

Has plans for notifying State and local authorities and recommending protective measures.	Same as NRC.	Same as NRC.
Performs annual simulated drills to test offsite notification speed, message content, and ability to contact emergency authorities.	Offsite notification test is stopped after checking phone numbers and ability to establish contact.	Same as DOE.

APPENDIX II

FACILITY PREPAREDNESS

Offsite

NRC	DOE	DOD
Assumes State and local agencies are capable of responding to nuclear emergencies.	Same as NRC.	Same as NRC.
	Prepared to provide offsite radiological assistance if requested by State and local authorities.	Same as DOE.
Is not required to demonstrate that State and local governments are capable of responding prior to license approval.		

APPENDIX II

STATE PREPAREDNESS

NRC	DOE	DOD
All States with NRC facilities had or were developing plans for nuclear emergencies.	All States with DOE facilities had or were developing plans for nuclear emergencies.	A large percentage of States with nuclear-weapons storage facilities did not have plans.
All State plans addressed nuclear emergencies at an NRC-licensed facility.	No State had plans addressing a nuclear emergency at a DOE facility.	No State plans addressed a nuclear emergency at a DOD facility.
Plans are primarily related to the restoration or recovery phase and only secondarily address initial response or public protection action.	Same as NRC.	Same as NRC.
Ten States had plans concurred with by NRC.		
Some States identified weaknesses through participation in facility drills.	No State participation in facility drills.	Same as DOE.
All but 1 of the 26 States with NRC-licensed powerplants considered themselves prepared; the exception considered themselves borderline.	Of the 15 States with major DOE nuclear facilities, 8 said they were prepared, 5 borderline, and 2 unprepared.	About half of the States with DOD nuclear-weapons facilities considered themselves prepared, one-third borderline, and the rest unprepared. Four States were not aware of nuclear installations in or near their States.

APPENDIX II

PREPAREDNESS AT THE LOCAL LEVEL

NRC	DOE	DOD
Local communities in the vicinity of NRC-licensed powerplants are not always informed or advised of the potential hazards consequences.	Local communities in the vicinity of DOE facilities are generally less informed than those in the vicinity of NRC powerplants.	Local authorities are not informed of a facility's nuclear capability because of DOD's security policy. However, at some facilities it appeared to be public knowledge.
Communities around NRC facilities have attempted to plan for nuclear emergencies.	Little or no planning effort by communities around DOE facilities.	No communities in the vicinity of DOD facilities had plans.
Plans are based on NRC's siting criteria, which may not provide adequate protection.	Same as NRC.	
Some communities have participated in full-scale drills held at NRC plants.	No communities have participated in drills.	Same as DOE.
Some local agencies, while invited to participate in drills, declined because they were not prepared.		
Some local authorities are generally prepared, others are not.	Local authorities are generally unprepared.	Same as DOE.

APPENDIX II

AGENCY COMMENTS AND OUR EVALUATION

DOD, DOE, GSA, NRC, and OMB provided us written comments on this report. Where appropriate, their comments have been incorporated into the final report. This appendix contains our responses to those substantive comments not incorporated into our report. The full texts of the agencies' comments are in appendices IV through VIII.

GENERAL SERVICES ADMINISTRATION (FEDERAL PREPAREDNESS AGENCY)

Agency comment

> "Since the initiation of this GAO report in October 1977, a significant event has occurred which could possibly influence the findings contained in the report. On September 16, 1978, the Congress approved the President's Reorganization Plan Number Three which will bring into being sometime between January 1, 1979, and April 1, 1979, the Federal Emergency Management Agency (FEMA). This new agency, comprised of five separate agencies presently within the Federal Government, will be the single point of contact for State and local governments for all Federal emergency preparedness, mitigation and response activities. The Federal Preparedness Agency will become part of the new FEMA. The role of this new agency, with authorities emphasizing its responsibilities as a focal point for all emergency preparedness activities, could alter the responsibilities assigned to the NRC in the Federal Register notice of December 24, 1975. The FEMA may rescind the Federal Register notice and assume responsibility for the leadership and coordination of the program presently assigned to the NRC. If this should occur, this could impact on certain of the working arrangements and recommendations contained in the report. It is suggested that the forthcoming activation of the FEMA and its potential impact on this report be investigated before final publication."

Our evaluation

We have included a brief discussion of FEMA in our report. However, the primary purpose of our review was to evaluate the effectiveness of nuclear facility, State, and local emergency planning to protect the public in the event of a peacetime nuclear emergency. The recommendations we

made in this report are to improve the level of nuclear emergency preparedness at facilities and surrounding communities. As such, these recommendations would also be appropriate after the formation of FEMA, if they have not been implemented by then.

We have, however, revised our report to recognize the important role FEMA could play in improving the level of State- and local-government emergency planning and preparedness activities for peacetime nuclear emergencies. We have also included a recommendation in our report that FEMA assume the responsibility for making policy and coordinating radiological emergency response planning around nuclear facilities.

Agency comment

> "Linking the licensing process to State and local plans may present a major obstacle to the licensing process by a challenge to the effectiveness of plans by opponents of nuclear powerplants."

Our review

We believe that only by linking the adequacy of the State or local capabilities to implement offsite protective actions to the licensing process can there be sufficient assurance that the public will be protected in the event of a major emergency at a nuclear powerplant. The possibility of not being able to have this matter resolved after a powerplant is licensed would render such an alternative unacceptable. Thus, if State or local authorities are unable to provide such assurance, then a potential site should be eliminated from consideration during the licensing process.

Agency comment

> "Linking the operation of a nuclear powerplant to adequacy of local plans may introduce a mechanism whereby opponents of nuclear power can prevent operation of such plants by challenging the adequacy of the plans. Adoption of this concept could result in its extension to other hazardous industrial facilities, i.e., liquified natural gas terminals, chemical plants and ammunition plants."

Our review

We believe that in the interest of public health and safety, viable emergency plans should be in place before

operation of a nuclear powerplant. Public health and safety must be the primary consideration rather than whether this will provide intervenors with a means of preventing the operation of nuclear powerplants. A carefully prepared and viable emergency plan should be able to withstand detailed scrutiny on its own mertis.

We did not look at the issue of nonnuclear emergency planning in our review. However, we do not believe that the fact this concept may also be applicable to other types of hazardous industrial facilities makes it any less valid for nuclear powerplants.

Agency comment

> "Suggest adding a recommendation that the Department of Energy establish necessary interfaces to include notification procedures and arrangements with all State and local jurisdictions near Department of Energy facilities. Department of Energy should work actively with local jurisdictions in developing effective plans."

Our review

We believe the substance of this suggested recommendation was made in the section titled "Recommendation to the Secretaries of Defense and Energy."

DEPARTMENT OF ENERGY

Agency comment

> "The digest also states that visits were made to those DOE 'research reservations.' There are considerable differences between DOE sites on which nuclear facilities are located. Even with the knowledge of which sites were visited, it is questionable that a fair sample was used on which to base the resulting conclusions and recommendations."

Our review

We are aware of the considerable differences between DOE sites on which nuclear facilities are located. However, since we were reviewing the generic issue of emergency planning for nuclear facilities rather than emergency planning for different types of operations being carried out at each facility, we believe that our sampling is an appropriate one on which to base our conclusions and recommendations.

Agency comment

"Care must be taken not to compare one-time (emergency) exposure against EPA standards for occupational or lifetime residence exposures."

Our review

It appears that a portion of the report was misinterpreted. The comparison made was with the EPA's PAGs, which are specifically intended to be used for nuclear emergency response planning rather than the "occupational or lifetime residence exposures" cited above. The concept of PAGs was introduced to radiological emergency response planning by EPA to assist authorities in deciding how much of a radiation hazard in the environment constitutes a basis for initiating emergency protective actions.

NUCLEAR REGULATORY COMMISSION

Agency comment

"NRC protects public health and safety by giving primary consideration to site characteristics and design features of nuclear facilities. Once we are satisfied that these meet an adequate measure of safety, we evaluate the emergency plans for the facility. From this point of view, State and local emergency plans provide an added margin of protection for the public in the vicinity of a nuclear facility in which we believe that an adequate measure of safety already exists. The Commission's licensing decision process is structured to take into account a wide variety of standards and criteria in the evaluation of proposed or existing nuclear power plants to the end that substantial conservatisms exist in design and operating safety margins. To the extent that proposed or existing plants fail to meet these standards, NRC would not license them or permit them to continue to operate. In this context, State and local plans, while related to the facilities undergoing the licensing process, and to applicant's emergency plans, are not essential in determining whether the plant can be operated without undue risk to public health and safety.

"Emergency planning and preparedness efforts by NRC inevitably tend to interact with the legitimate interests of State and local governments.

Their authority and responsibility to respond to emergency situations within their jurisdictions have been given explicit recognition in the Commission's regulations. But, NRC does not have statutory authority over State and local governments to require them to develop and to maintain such plans. This fact should not be construed, however, as suggesting that the NRC should not continue to provide guidance, assistance and training for the States, nor even to evaluate their plans and make recommendations for improvement. Such a program continues to be an important NRC objective and is clearly recognized as NRC policy. The improvement of radiological emergency response capabilities by States and local governments is the principal focus of attention of a Federal interagency program in which NRC, through its Office of State Programs, exercises a lead agency role. In its formative stages, this program was predominantly a training program. As it has evolved, the program has placed increasing emphasis upon review of State and local government radiological emergency response plans to determine whether they contain the essential planning elements listed in NRC's primary guidance document for States, NUREG-75/111. As noted above, NRC does not consider concurrence in such plans to be a fundamental prerequisite for licensing nuclear facilities. Through the concurrence approach, we have been able to achieve significant improvements by cooperative means without entering into confrontation with States and local governments over issues of Federal Preemption vs. State sovereignty, or Federal competence vs. specialized local knowledge of local capabiliites and local intent."

"Despite NRC's lack of statutory authority over State and local governments to require them to develop and implement emergency response plans, we believe that we have achieved considerable success through cooperative means. These include such activities as:

--preparation and issue of an updated 'Guide and Checklist' of 70 planning elements to be incorporated into State and local radiological emergency response plans;

--development and conduct of training courses as needed for State and local personnel

engaged in radiological emergency response activities; more than 1,000 State and local officials have received this training in the last five years;

--chairing of national and regional advisory committees which provide assistance to States and local governments in developing and testing emergency response plans;

--review of--and concurrence in--eight State and local radiological emergency response plans; [see GAO note, p. 56.]

--coordination of emergency response efforts of NRC applicants and offsite agencies of State and local governments;

--preparation, with EPA, of a Task Force Report which provides a 'Planning Basis For the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants.' Among other recommendations, the Task Force Report calls for the establishment of emergency planning zones on a generic basis around all light water nuclear power facilities."

Our review

We recognize that NRC does an extensive evaluation of site characteristics and design features before licensing nuclear powerplants. We agree that NRC's safety evaluations of nuclear powerplants designs provide a high degree of assurance that severe nuclear accidents will not occur. In the report, however, we point that while serious nuclear accidents may be highly unlikely, they are possible, and may have catastrophic consequences. Therefore, we believe that adequate State and local emergency-response plans are more than a matter of prudence but should be an integral part of the licensing process.

The purpose of the licensing process is to assure that facilities can be operated safely and pose no threat to public health and safety. Therefore, we believe all significant safety issues should be resolved before nuclear facilities are licensed for operation. Before an NRC-licensed facility becomes operational, we believe States should have an acceptable emergency plan in the unlikely

event of an accident affecting offsite locations. In our view, this is a reasonable requirement for determining whether a site is suitable for the location of a nuclear facility.

In our report, we recognize the fact that NRC has no statutory authority over State and local governments requiring them to develop and maintain peacetime nuclear emergency plans. We also agree that NRC has made significant strides toward improving the level of State emergency planning. However, in our review we identified deficiencies in emergency planning at both the State and local levels where the most immediate action to protect public health and safety is required. Emergency planning was especially deficient around DOD and DOE nuclear facilities. We, therefore, believe more needs to be done to improve the level of State and local planning and preparedness, particularly around DOD and DOE facilities.

Recognizing NRC's lack of statutory authority over State and local peacetime nuclear emergency response planning, we have recommended that FEMA assume responsibility for making policy and coordinating radiological emergency-response planning around nuclear facilities. We have also recommended that FEMA broaden radiological emergency-planning assistance to State and local governments around DOD and DOE facilities that have a potential nuclear hazard comparable to commercial powerplants. FEMA would not have statutory authority to require State and local governments to develop and maintain adequate peacetime nuclear emergency plans. However, as a focal point for Federal emergency preparedness activities, we believe FEMA can more effectively influence State and local governments to develop adequate emergency plans around nuclear facilities, especially those belonging to DOD and DOE.

It should be noted, however, that having FEMA as the lead Federal agency in peacetime nuclear emergency-response planning would not change our views that the operation of nuclear facilities should be limited to those States and localities where emergency plans meet what NRC has identified as essential planning elements.

Agency comments

"Page [7]--The report creates an impression that the offsite supportive services from State and local agencies are taken for granted. The NRC, however, does not take these services for granted. Specific requirements are set forth in Appendix E to 10 CFR Part 50. As an example, licensees' emergency plans

are required to provide agreements reached with local, State and Federal officials and agencies for the early warning of the public and for public evacuation or other protective measures should such warning, evacuation, or other protection measures become necessary or desirable."

Our review

The section in question discusses the Federal facility role in general. For the most part, offsite supportive services from State and local agencies were taken for granted at the DOD and DOE facilities we visited. NRC has made a greater effort than the other Federal agencies involved to assure that (1) State and local officials could be notified of an accident at the facilities under its jurisdiction and (2) meaningful information would be provided these officials. However, we still believe that NRC has not adequately assured itself that State and local agencies can effectively respond to radiological emergencies at its facilities.

Agency comments

"Page [28]--The GAO report states 'There does not appear to be a federal policy on providing accident response information to the general public * * * the federal response to this lack of direction has generally been to discount the need for distribution of public information. Federal agencies have not required facility operators to include public information as part of their emergency plan except for details on when and how post-accident public information should be presented.' We consider that these statements are misleading and provide an incorrect characterization of NRC policies and practices regarding information made available to the public. We believe it is better for evacuation plans to be detailed, communicated and implemented by knowledgeable professionals than to depend on the interpretation and translation of general planning information into specific case actions by members of the general public.

Our review

We do not mean to imply that the general public should be expected to interpret and translate general planning information into specific emergency actions. Rather, our point is that the public should be provided such information as (1) the potential hazards involved, (2) probable responses

expected, and (3) how emergency instructions will be communicated to them. We believe such information could result in a more effective and quick response from people living around nuclear facilities to the directions of professional emergency personnel in the unlikely event of a radiological release from a nuclear facility.

Agency comments

> "Page [26]--The GAO report stated "neither the state nor local emergency service agency near one NRC nuclear facility had plans which considered evacuation even though this procedure was identified by facility operators as the primary offsite emergency protective measures. Local officials in another community were confused about what they should do because the key officials for coordinating and initiating nuclear emergency measures was in the hospital undergoing an operation. "We consider that experience has shown, and the news media has documented, that public officials are quite capable of dealing with emergencies in their communities and, in fact, we find that evacuations are being effected on almost a weekly basis in the United States, even in the absence of formal, documented plans. It is important to recognize that the role of local officials in effecting an evacuation is essentially independent of the causative agent for initiating such action. It is also pertinent to cite the finding in a recent publication by the Disaster Research Center based on extensive study of human behavior in disasters. "The assumption that local organizations are unable to cope with disasters is based on both the notion that these organizations and the communities in which they are located are overwhelmed by disaster impact, and also by the fear that the employees of these organizations are so affected by disaster impact that their efficiency is reduced. Neither of these notions stand up well under close observation."

Our review

The issue which our report addresses is not whether public officials can or cannot rise to the occasion of dealing with nuclear emergencies should one occur in their community. Rather this report addresses the issue of whether or not nuclear emergency plans can be effectively implemented.

Agency comments

"Page [31]--The GAO report states 'The warning times for natural disasters can often be measured in days or hours; the warning times for nuclear emergencies often will be measured in minutes.' The contrast portrayed by this statement is misleading. To achieve a different perspective, consider other non-nuclear disasters such as transportation accidents, toxic chemical releases, explosions, fires, dam failures, bridge collapses, landslides, flash floods, and earthquakes all of which give little or no warning. Compare these situations to the most severe Class 9 accident release categories which provide time intervals between the onset of the hypothetical accident and the release to the atmosphere of 2 to 30 hours during which warning could be given. The latter contrast, particularly in light of the relative probabilities, should certainly give cause to rethink priorities on the part of those involved in disaster planning as compared to the statement in the GAO report."

Our review

We have revised the subject page to put our discussion of warning times for disasters in better perspective. However, the fact that some disasters provide no warning at all does not in our view affect the need for people living around nuclear facilities to be fully informed on what to do in the event of a nuclear accident.

Our point is that some serious natural disasters, such as hurricanes or major floods, can be predicted hours or days in advance and the potentially affected public can be forewarned. In contrast, warning times for nuclear accidents may not be long. Although a serious nuclear release is very unlikely, we believe it is in the best interests of public health and safety to inform the public living around nuclear facilities of the potential hazards involved, probable responses expected, as well as how instructions will be communicated to them.

We agree that warning times for nuclear accidents may vary. The Rasmussen Reactor Safety Study indicates, for example, that major releases may range from one-half hour to several days, with the major portion of the release occurring well within the first day.

However, since it cannot be predicted in advance whether the release will take one-half hour to several days, for planning purposes, we believe it is prudent to assume warning times will be short.

DEPARTMENT OF DEFENSE

Agency comment

> "The draft report is based upon a limited sample of DOD facilities and appears to focus primarily on the relationship between the individual facility operators and the immediate civilian community, without reference to the overall Federal nuclear emergency response efforts."
>
> "In this regard, to devise systematic policy and planning for dealing with peacetime nuclear emergencies, the Federal Preparedness Agency, GSA, and other Federal agencies have developed the Federal Response Plan for Peacetime Nuclear Emergencies (FRPPNE). This plan recognizes that Federal-state cooperation is a fundamental ingredient in effective preparedness planning for peacetime nuclear emergencies. Annex I of this plan provides 'Guidelines of Federal-state Relationships.' The report should recognize the complete Federal response organization and, perhaps, the conclusions dealing with Federal responsibility in this area would then need alteration."

Our review

We recognize that substantial Federal resources are available to support State and local governments in coping with disasters and emergencies, including peacetime nuclear emergencies. However, our review concentrated on the emergency and protection phases of a peacetime nuclear emergency. The emergency phase involves assessing the situation, determining the need for protective action, and initiating the action. The most important step during this phase is the nuclear facility operators' notification to State and local officials that a release has gone offsite. The protection phase involves State and local actions to minimize public exposure to radiation, such as via evacuation and sheltering.

Generally, the Federal emergency organizations' roles in an actual emergency would be to assist State and local governments in mitigating the longer-term effects of an

There may well be an institutional conflict between these missions. A corollary question is whether preparedness for peacetime nuclear emergencies benefits from, or could benefit from, a closer association with other emergency preparedness programs such as the civil defense and natural disaster preparedness programs. Finally, the effectiveness of oversight of the accomplishment of offsite nuclear emergency preparedness planning by the Federal Preparedness Agency should be addressed.

"These questions will clearly be under the jurisdiction of the Director of the new Federal Emergency Management Agency which was authorized by Reorganization Plan No. 3 of 1978, and which will be established early next year. The usefulness to him or her of your report on emergency preparedness would be enhanced by some consideration of the underlying reasons for the conditions noted therein, and of alternative assignments of responsibility for off-site nuclear emergency preparedness planning."

Our review

The purpose of our review was to examine whether peacetime nuclear emergency-response plans existed at the operational level and whether they could be effectively implemented. Based on problems we identified at the State and local levels in planning for radiological emergencies around nuclear facilities, we agree that peacetime nuclear emergency-response planning would benefit from a closer association with the civil defense and natural disaster preparedness programs. We have recommended that FEMA assume the responsibility for making policy and coordinating radiological emergency-response planning around nuclear facilities. We believe that as the focal point for Federal emergency-preparedness activities, FEMA could more effectively influence States and local governments to develop adequate emergency plans around nuclear facilities, especially those belonging to DOE and DOD.

GAO note: After providing us its formal comments, NRC informed us that it has concurred in two more plans.

accident, such as the decontamination of equipment and property. In fact, FRPPNE recognizes that the initial responsibility for taking the proper response actions to cope with the offsite effects of a radiological emergency at a nuclear facility would normally be in the local government. According to Annex I of FRPPNE,

> "* * * it is expected that State and local governments will exercise their authority for responding to peacetime nuclear emergencies, and will have prepared plans and developed operational capabilities for the immediate actions needed to protect the public health and safety."

Because the primary purpose of our review was to evaluate the effectiveness of nuclear facility, State, and local emergency planning to protect the public in the event of a peacetime nuclear emergency, our report does not discuss Federal agency response roles.

Rather than cause us to change our conclusions concerning Federal responsibilities in this area, FRPPNE tends to reinforce them. FRPPNE recognizes the importance of Federal/State/local cooperation in peacetime nuclear emergency planning. Yet, we found a general lack of interface with State and local governments in peacetime nuclear emergency planning at the nuclear facilities we visited. This is especially true of DOD and DOE facilities where we found State and local planning for offsite radiological emergencies almost non-existent. We believe that by failing to provide adequate guidance and assistance to State and local governments in developing peacetime nuclear emergency plans, these Federal agencies have not fulfilled their responsibility for seeing to it that their facilities do not pose a hazard to public health and safety.

OFFICE OF MANAGEMENT AND BUDGET

Agency comments

> "We have done no independent analysis which would support objections to the findings or the recommendations of the report. We are somewhat disappointed, however, that the report fails to address fundamental organizational questions which may underlie the specific inadequacies noted in the report. The most fundamental of these questions is whether agencies whose principal mission is to foster and expedite the establishment of nuclear facilities should be the same agencies charged with off-site nuclear emergency preparedness.

Department of Energy
Washington, D.C. 20545

October 23, 1978

J. Dexter Peach, Director
Energy and Minerals Division
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Thank you for the opportunity to review and comment on the GAO draft report entitled "Emergency Preparedness Around Nuclear Facilities Needs Improvements". Generally we agree with the draft report and support the objectives of assuring that emergency response capabilities are adequate. Our views with respect to the report and the recommendations contained therein follow:

The digest of the draft report states that "the Nuclear Regulatory Commission (NRC) is the lead Federal Agency responsible for assisting state and local governments in radiological emergency response planning for any type of fixed nuclear facility". DOE is not aware that the NRC has this responsibility around those site activities which are primarily defense related.

The digest also states that visits were made to three DOE "research reservations". There are considerable differences between DOE sites on which nuclear facilities are located. Even with the knowledge of which sites were visited, it is questionable that a fair sample was used on which to base the resulting conclusions and recommendations.

The emergency planning zones mentioned in the report appear to refer to nuclear power reactors. The DOE production reactor sites have much larger exclusion areas. DOE policy is, and always has been, 1) to locate its nuclear facilities at remote sites, 2) to provide engineered safety features which prevent or mitigate the consequences of identifiable accidents, and 3) to prepare for handling emergencies to the extent necessary to assure that there will be no undue risk for either on-site personnel or the public even if the safety features are not fully effective.

The DOE site-wide and individual facility emergency plans are based on a realistic assessment of the consequences of potential accidents. Since the DOE reactors are designed and operated to assure that the consequences

of such an accident would not exceed the NRC dose guideline values (10 CFR 100) at the individual facility fence, these emergency plans do not go beyond requiring a periodic test of the operability of communications with nearby facilities and adjacent populated areas. Such communications would only be needed if a precautionary local evacuation is deemed prudent after an accident occurs. In the case of on-site facilities this would involve implementation of that facility's evacuation plan. Since DOE does not have jurisdiction over adjacent populated areas, the extent to which they plan to respond must be left to the judgment of the state and local officials. However, the DOE sites are prepared to assist with meteorological information, radiation monitoring, and even transportation. Local officials are aware that such assistance is available on request. A substantial effort of informing the public, and especially the public officials, about the operation and safety of facilities has been and continues to be undertaken. Safety documents are available for public inspection and letters from the public are answered promptly and honestly.

Prior to authorizing operation, each of the DOE reactor facilities has been subjected to an extensive safety review, including evaluations by NRC, the Advisory Committee on Reactor Safety (ACRS) and the independent DOE Headquarters Safety Branch. These reviews considered the adequacy of the emergency plans in relation to the accidents identified in a Final Safety Analysis Report and found them to be acceptable. These facilities are also subjected to annual safety audits by the responsible DOE field office. These audits focus on design modifications, changes to procedures, and other conditions which might identify unreviewed safety questions (i.e., anything that was not considered in the original safety review or that could increase the probability or magnitude of an accident that was previously considered). Any change so identified is then subjected to the same safety review as the original one, and taken into account in the emergency procedures. To date, no DOE reactor safety review has identified any potential accidents in which more than the evacuation of nearby on-site facilities or the precautionary evacuation of small groups of off-site residents would be required. As noted above the emergency plans provide for these contingencies.

DOE also has conducted an intense study in 1978 of its emergency responsibilities. The Deputy Secretary has approved the organization and assignment of functions within DOE that are expected to produce the kind of comprehensive emergency preparedness required to deal with all kinds of emergencies that may involve the DOE's energy programs, including nuclear. This program includes addressing the matters on which the draft report makes recommendations to DOE.

The report states that the NRC criteria for siting nuclear power plants is five times higher than those the Environmental Protective Agency (EPA) believes might require action to protect the public. It is not likely that the absolute biological effects of low-level radiation will be completely resolved in the near future, if ever. Care must be taken not to compare one-time (emergency) exposure against EPA standards for occupational or lifetime residence exposures.

The wording contained in the recommendations on page 49 implies authorities on the part of the Federal Government which may not exist. It is suggested that the requirements be restated to encourage and assist local authorities in the development and exercise of emergency plans and to provide information that can be disseminated to the general public concerning hazards, plans and responses.

It is also suggested that the wording in the first paragraph under "Recommendations to the Secretary of Defense", page 50, be changed from "....the DOE should declassify this information" to "....this information should be declassified". This new wording would allow declassification of Formerly Restricted Data under statute as the joint responsibility of DOE and DOD.

We would be pleased to provide any additional information that is desired in this matter.

Sincerely,

Donald C. Gestiehr
Acting Director
GAO Liaison

[See GAO note, p. 77.]

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

18 DEC 1978

Mr. Monte Canfield, Jr.
Director
Energy and Minerals Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Canfield:

This is in reply to your letter to the Secretary of Defense regarding your report dated September 20, 1978, on "Emergency Preparedness Around Nuclear Facilities Needs Improvement," (Code 30038), OSD Case No. 5003.

The draft report is based upon a limited sample of DoD facilities and appears to focus primarily on the relationship between the individual facility operators and the immediate civilian community, without reference to the overall Federal nuclear emergency response efforts.

In this regard, to devise systematic policy and planning for dealing with peacetime nuclear emergencies, the Federal Preparedness Agency, GSA, and other Federal agencies have developed the Federal Response Plan for Peacetime Nuclear Emergencies (FRPPNE). This plan recognizes that Federal-state cooperation is a fundamental ingredient in effective preparedness planning for peacetime nuclear emergencies. Annex I of this plan provides "Guidelines of Federal-State Relationships." The report should recognize the complete Federal response organization and, perhaps, the conclusions dealing with Federal responsibility in this area would then need alteration.

In addition to the above, Public Law 93-288 requires that Federal agencies provide assistance in the event of a disaster. DoD has published DoD Directives 3025.1 and 5100.52 which provide guidance on responding to various types of disasters or incidents. The policy guidance provided by these documents is applicable to all DoD components that have response capabilities. The question of on-site versus off-site implementation of actions to protect public health and safety is one of jurisdiction. Therefore, the conclusion that DoD does not prepare plans for dealing with off-site releases is not supported, as evidenced by DoD's role in the Interagency Radiological Assistance Plan (IRAP) and the FRPPNE.

It is agreed that those states and localities which are not prepared for valid threats should take necessary remedial actions and that well

coordinated Federal assistance should be available. By no later than 1 April 1979, DCPA will become part of a new agency, the Federal Emergency Management Administration (FEMA), which reports directly to the President. While specific policy and functions have not been developed yet, both the President and the Congress have indicated that FEMA is to have a major role in all types of preparedness planning and response. It follows then that FEMA can play a major role in providing assistance to states and localities in emergency planning for radiological releases from DoD installations.

With regard to notifying state and local governments, within the DoD, the Defense Civil Preparedness Agency (DCPA) is tasked to discharge and perform the disaster warning function delegated to the Secretary of Defense by EO 11575. The DCPA National Warning Systems include voice communications with approximately 350 Federal installations and 900 state and local facilities. The civil defense teletype and voice landline communications systems provide 24-hour communications with all DCPA locations and state civil preparedness offices.

Information that reveals that a military installation is a nuclear weapon storage site is classified under existing policy jointly agreed to by the Department of Energy (DOE) and the DoD. That policy is set forth in the Joint DOE/DoD Nuclear Weapons Classification Guide (CG-W-4) and requires that information revealing the fact that an installation in the United States is a site for storage of nuclear weapons be classified Confidential or higher, the level of classification being determined on the basis of relevant special circumstances. This policy further provides that information that reveals nuclear weapons are stored in any state without revealing the specific location will be either unclassified or Confidential FRD depending on the domestic political climate, the sensitivity of the site location and the relation to national planning. Thus, current policy requires classification of a nuclear weapon storage site in a state with only one military installation.

It is, and has been since 1974, joint DOE-DoD policy that generalizations concerning the fact that certain deployed weapons in the United States have nuclear warheads in place is unclassified information. Notwithstanding, it is DoD public information policy to refrain from public statements of the generalizations and to neither confirm nor deny the presence of nuclear weapons in any specific location. The GAO recommendation that DoD deal with a few key state or local officials on a classified basis is generally feasible. However, it does not appear that it will be feasible to accommodate the intent and purpose of the recommendation that the general public living in areas surrounding nuclear weapons storage sites be informed concerning those sites.

We would suggest, in the event this report has not been sent to the Federal Preparedness Agency for comment, that they be permitted to reply prior to its finalization.

Sincerely,

JAMES P. WADE, JR.
Assistant to the Secretary of
Defense (Atomic Energy)

General
Services
Administration Washington, DC 20405

NOV 20 1978

Honorable Elmer B. Staats
Comptroller General of
the United States
General Accounting Office
Washington, DC 20548

Dear Mr. Staats:

The General Services Administration (GSA) is pleased to respond to your request for review and comments of the GAO draft report entitled, "Emergency Preparedness Around Nuclear Facilities Needs Improvement". The Federal Preparedness Agency, GSA, is particularly interested in this report as it addresses responsibilities assigned by the Federal Preparedness Agency to the Nuclear Regulatory Agency.

Thank you for providing the General Services Administration an opportunity to comment on this draft report. Our comments are enclosed.

Sincerely,

Jay Solomon
Administrator

Enclosure

General Services Administration
Comments on GAO Draft Report
"Emergency Preparedness Around
Nuclear Facilities Needs Improvement"

Comments are provided as follows:

General Comments

The report is very complete and indicates a thorough, comprehensive approach by General Accounting Office researchers in undertaking this study. It is well organized and presents in logical sequence present activities and problems associated with the level of emergency preparedness around Nuclear Regulatory Commission (NRC), Department of Defense, and Department of Energy nuclear facilities. The findings in the report reflect considerable insight into the present status of local community preparedness planning and the need for an improved interface with nuclear facilities that may be nearby.

Since the initiation of this GAO report in October 1977, a significant event has occurred which could possibly influence the findings contained in the report. On September 16, 1978, the Congress approved the President's Reorganization Plan Number Three which will bring into being sometime between January 1, 1979, and April 1, 1979, the Federal Emergency Management Agency (FEMA). This new agency, comprised of five separate agencies presently within the Federal Government, will be the single point of contact for State and local governments for all Federal emergency preparedness, mitigation and response activities. The Federal Preparedness Agency will become part of the new FEMA. The role of this new agency, with authorities emphasizing its responsibilities as a focal point for all emergency preparedness activities, could alter the responsibilities assigned to the NRC in the Federal Register notice of December 24, 1975. The FEMA may rescind the Federal Register notice and assume responsibility for the leadership and coordination of the program presently assigned to the NRC. If this should occur, this could impact on certain of the working arrangements and recommendations contained in the report. It is suggested that the forthcoming activation of the FEMA and its potential impact on this report be investigated before final publication.

Specific Comments

page 2, line 7	Change Is to It
page 9, lines 12-15	Comment: This statement is not in consonance with the statement on lines 8-9. Federal responsibilities are in support of State plans and actions.
page 14, lines 24-27	Comment: This statement is unclear as to the authority for Federal responsibilities beyond supporting State and local plans and actions.
page 20, lines 4-5	Change four to eight.
page 20, line 25 page 21, lines 1-3	Comment: Other factors within a State may be equally important, i.e., funding of emergency preparedness, relationship of State officials with NRC and status of planning within the State.
page 21, lines 7-10	Comment: This requirement is probably beyond the authority and capability of licensees.
page 22, line 25 page 23, lines 1-2	Comment: Linking the licensing process to State and local plans may present a major obstacle to the licensing process by a challenge to the effectiveness of plans by opponents of nuclear power plants.
page 24, table	Comment: This table may be misleading in that the statistics reflected are probably equally applicable to a wide range of emergencies not just peacetime nuclear emergencies.
page 34, lines 19-22	Comment: Suggest this sentence be rewritten to more clearly indicate that responsibility for testing and checking local emergency capabilities is a State and local responsibility.

[See GAO note, p. 77.]

page 38, lines 23-25 page 39, lines 1-3	Comment: The dissemination of public information is a joint responsibility of Federal, State and local governments. Suggest this paragraph be rewritten to show a need for a coordinated Federal, State and local approach to this problem.
page 40, lines 19-25	Comment: There may be some conflict with State prerogatives in this statement as overall responsibility resides in State and local governments.
page 44, lines 21-22	Comment: State and local governments are responsible for protecting the public from a nuclear emergency.
page 47, lines 8-10	Comment: Linking the operation of a nuclear power plant to adequacy of local plans may introduce a mechanism whereby opponents of nuclear power can prevent operation of such plants by challenging the adequacy of the plans. Adoption of this concept could result in its extension to other hazardous industrial facilities, i.e., liquid natural gas terminals, chemical plants and ammunition plants.
page 49, lines 17-18	Comment: This concept may result in significant delays in the licensing process.
page 51, line 19	Comment: Suggest adding a recommendation that the Department of Energy establish necessary interfaces to include notification procedures and arrangements with all State and local jurisdictions near Department of Energy facilities. Department of Energy should work actively with local jurisdictions in developing effective plans.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 18 1974

Mr. J. Dexter Peach
Director, Energy and Minerals Division
U.S. General Accounting Office
441 G Street, N.W.
Washington, D. C. 20548

Dear Mr. Peach:

We appreciate the opportunity to comment on the draft GAO report "Emergency Preparedness Around Nuclear Facilities Needs Improvement". The report makes several points which are useful to the Nuclear Regulatory Commission and to other Federal agencies involved in this area, and it highlights several areas in which we agree that further work by NRC may be desirable.

The general tone of the report suggests that emergency preparedness by State and local governments around NRC licensed facilities is in disarray. Although we agree that improvements can certainly be made in this area, we believe that the impression left by the report on the capabilities and preparedness of State and local officials may be doing them a disservice. While short of the results we ultimately desire, we believe the level of planning and preparedness is definitely improving due in large part to the support and voluntary cooperation of the State and local personnel.

I would like to comment briefly on each of the key conclusions of your report:

1. NRC should approve license applications for nuclear facilities only in States that have concurred-in plans.

NRC protects public health and safety by giving primary consideration to site characteristics and design features of nuclear facilities. Once we are satisfied that these meet an adequate measure of safety, we evaluate the emergency plans for the facility. From this point of view, State and local emergency plans provide an added margin of protection for the public in the vicinity of a nuclear facility in which we believe that an adequate measure of safety already exists. The Commission's licensing decision process is structured to take into account a wide variety of standards and criteria in the evaluation of proposed or existing nuclear power plants to the end that substantial conservatisms exist in design and operating safety margins. To the

extent that proposed or existing plants fail to meet these standards, NRC would not license them or permit them to continue to operate. In this context, State and local plans, while related to the facilities undergoing the licensing process, and to applicant's emergency plans, are not essential in determining whether the plant can be operated without undue risk to public health and safety.

Emergency planning and preparedness efforts by NRC inevitably tend to interact with the legitimate interests of State and local governments. Their authority and responsibility to respond to emergency situations within their jurisdictions have been given explicit recognition in the Commission's regulations. But, NRC does not have statutory authority over State and local governments to require them to develop and to maintain such plans. This fact should not be construed, however, as suggesting that the NRC should not continue to provide guidance, assistance and training for the States, nor even to evaluate their plans and make recommendations for improvement. Such a program continues to be an important NRC objective and is clearly recognized as NRC policy. The improvement of radiological emergency response capabilities by States and local governments is the principal focus of attention of a Federal interagency program in which NRC, through its Office of State Programs, exercises a lead agency role. In its formative stages, this program was predominantly a training program. As it has evolved, the program has placed increasing emphasis upon review of State and local government radiological emergency response plans to determine whether they contain the essential planning elements listed in NRC's primary guidance document for States, NUREG-75/111. As noted above, NRC does not consider concurrence in such plans to be a fundamental prerequisite for licensing nuclear facilities. Through the concurrence approach, we have been able to achieve significant improvements by cooperative means without entering into confrontation with States and local governments over issues of Federal preemption vs. State sovereignty, or Federal competence vs. specialized local knowledge of local capabilities and local intent.

Despite NRC's lack of statutory authority over State and local governments to require them to develop and implement emergency response plans, we believe that we have achieved considerable success through cooperative means. These include such activities as:

- preparation and issuance of an updated "Guide and Checklist" of 70 planning elements to be incorporated into State and local radiological emergency response plans;

- development and conduct of training courses as needed for State and local personnel engaged in radiological emergency response activities; more than 1,000 State and local officials have received this training in the last five years;

- chairing of national and regional advisory committees which provide assistance to States and local governments in developing and testing emergency response plans;

- review of -- and concurrence in -- eight State and local radiological emergency response plans;

- coordination of emergency response efforts of NRC applicants and offsite agencies of State and local governments;

- preparation, with EPA, of a Task Force Report which provides a "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants." Among other recommendations, the Task Force Report calls for the establishment of emergency planning zones on a generic basis around all light water nuclear power facilities.

2. Verify that State and local agencies are capable of effectively implementing their emergency plans.

We believe an explanation of our current activities is in order. Because of the link between State and local government emergency planning and the facilities involved in the licensing process, NRC recognizes the importance of this aspect of emergency preparedness. Section 5.4 of Annex A to Regulatory Guide 1.101 for example, provides that applicants shall submit to the NRC staff "a description for each (offsite) agency of specific response capabilities in terms of expertise of personnel and other organizational resources available." Further, applicants are required to incorporate in their plans provisions for drills and test exercises in which offsite agencies are expected to participate. There is no requirement, however, that the offsite agencies participate and NRC has no power to compel such participation. NRC's Office of Inspection and Enforcement provides a followup with State and local agencies to assure their understanding of their response roles. In addition, the Office of Nuclear Reactor Regulation (NRR) regularly consults with the Office of State Programs (SP) to establish an avenue independent of the applicant for obtaining information regarding State and local agency capability. The provisions of the existing consultation agreement between NRR and OSP include "an assessment of the State and local government emergency preparedness capabilities identified by NRR as necessary to put into place the agreements contemplated by NRC regulations." The specific information requested by the licensing staff includes the qualifications of key officials for each of the responsible State and local agencies, as well as the agency resources available for implementing their response role. But, as a general proposition, we believe that greater testing and exercise of State and local plans is both necessary and desirable.

3. Require formal agreements between license applicants and State and local agencies.

Current regulations already require this, although perhaps not with the specificity suggested in the report. (see page 2 of the attachment for discussion which relates to this).

4. Adopt the idea of an emergency planning zone around NRC licensed facilities.

An NRC/EPA Task Force has recently completed its final report which deals with this subject. (NUREG-0396). It is the subject of a Federal Register Notice inviting public comment. After this 90 day public comment period and the analysis of views presented, the Staff will present its recommendations to the Commission for final action.

In summary, we believe may of the items you discuss are already being addressed by NRC although perhaps not to the extent to which you suggest. We will consider those areas to determine if we can make improvements. In spite of several specific areas of disagreement and emphasis, we are in agreement with the general notion that improvements in State and local government response capabilities can and should be made.

As an enclosure to this letter, we are providing some detailed comments on the report.

Sincerely,

Lee V. Gossick
Executive Director for Operations

Enclosure:
As stated

Specific Comments On GAO Report

1. Page 2 - GAO should distinguish its own conclusions from those of the Reactor Safety Study (WASH-1400) in the following statement: "the study concluded that nuclear accidents may happen and would present a potential adverse health consequence that provides a sobering contrast to the estimated risk". The words "in our opinion" should be inserted after the words "...health consequences that, in our opinion, provides..." because the "sobering contrast" statement is the GAO conclusion and is not found in WASH-1400.

2. Page 2 -- The statement "that there will be evacuation of an area 25 miles downwind from the accident site" is misleading since the study assumed that 30% of the population remained in place.

3. Pages 8 and 9 -- The report creates an impression that the offsite supportive services from State and local agencies are taken for granted. The NRC, however, does not take these services for granted. Specific requirements are set forth in Appendix E to 10 CFR Part 50. As an example, licensees' emergency plans are required to provide "agreements reached with local, State and Federal officials and agencies for the early warning of the public and for public evacuation or other protective measures should such warning, evacuation, or other protection measures become necessary or desirable."

[See GAO note, p. 77.]

4. Page 10 -- The statement that "NRC does not require that emergency plans be developed to respond to an emergency resulting in releases going offsite or that drills be conducted involving offsite personnel" is not true. Such requirements are explicitly imposed on the licensee by Paragraphs III, IV.A, IV.C, IV.D, and IV.I of Appendix E to 10 CFR Part 50. Further amplification of these requirements is discussed in Section B of Regulatory Guide 1.101, with specific recommendations in Sections 4.1.4, 4.1.5, 5.4, 6.1, 6.2, 6.4.1.2, 6.4.3.2, 7.3.2, 8.1.2 and 10 (item 1) of Annex A to the guide.

5. Pages 18 and 19 -- The statements contained in these pages dealing with State and local planning provide an inaccurate and misleading characterization of the NRC position and requirements with respect to the emergency plans required for submittal by a licensee in support of a nuclear power plant. The licensing staff requires that licensees submit on the docket either the appropriate State and local emergency plans or in part, a comprehensive description of each agency's authority, responsibility, duty, and capability which provides a clear concept of their radiological response role. Furthermore, additional assurance that such response will be taken is evidenced in the required written agreements between the licensee and each agency which documents an understanding of their response role and their commitment to take such action.

6. Page 21 -- The observation that "it appears to us that NRC's belief that State and local agencies can effectively respond to nuclear emergencies is without foundation" apparently is based on the GAO review of the initial 5 reports generated as a result of the memorandum of understanding between NRR and the Office of State Programs. We could appreciate the GAO conclusion if this were the sum and substance of the input used by the licensing staff in assessing State and local response capability in support of a licensed nuclear power plant. However, this is not the case. The major input in our assessment is normally derived directly from the information submitted on the docket by the applicant. In addition, historically there is an abundance of evidence that local agencies respond effectively to all kinds of emergencies. An evacuation is an evacuation, regardless of the reason for its need although we acknowledge that local agencies should have a planning basis for knowing when, where, whether, and how fast they should respond in case of an emergency.

Nevertheless, the degree to which State and local governments may be able to effectively respond to a nuclear emergency may, in a practical sense, vary among the various State and local governments. By our count there are more than 150 countries in which nuclear facilities are currently located or immediately adjacent to counties in which nuclear facilities are located. NRC has never made an

inventory of the emergency plans of these counties nor have all of these plans ever been systematically assessed.

7. Pages 26 and 34 -- In the discussion regarding emergency preparedness at the local level we question the validity of the statement "As a result, there is little or no assurance that the health and safety of the public would be protected."

As discussed in our proceeding comments, current licensing practices emphasized coordinated emergency response planning by the licensee, particularly with local agencies and officials having jurisdiction over the immediate environs surrounding a nuclear power plant. Our emphasis is reflected by the staff requirements for licensees which include identification of local agency authority, responsibility, and capability; criteria for offsite notification and response; assured communication channels; written agreements for local agency response; and annual drills including participation of offsite personnel.

8. Page 27 -- The statement that "such zones (low population zone) are not established based on population" is misleading. While it is true that the LPZ is not solely determined on population considerations, population is definitely one of the factors evaluated to determine the acceptability of the LPZ.

9. Pages 27, 30 and 32 -- The statements that "NRC radiation dose levels for determining low population zones are five times higher than the levels prescribed by EPA as requiring actions to protect the public health and safety" and "DOE officials said ... they were aware that NRC's criteria and EPA's protective action guidelines differed..." are indicative of a serious misunderstanding of NRC siting criteria and the role of EPA protective action guides in emergency planning.

10. Page 36 -- The GAO report states "neither the state nor local emergency service agency near one NRC nuclear facility had plans which considered evacuation even though this procedure was identified by facility operators as the primary offsite emergency protective measures. Local officials in another community were confused about what they should do because the key official for coordinating and initiating nuclear emergency measures was in the hospital undergoing an operation." We consider that experience has shown, and the news media has documented, that public officials are quite capable of dealing with emergencies in their communities and, in fact, we find that evacuations are being effected on almost a weekly basis in the United States, even in the absence of formal, documented plans. It is important to recognize that the role of local officials in effecting an evacuation is essentially independent of the causative agent for initiating such action.

It is also pertinent to cite the finding in a recent publication by the Disaster Research Center based on extensive study of human behavior in disasters. "The assumption that local organizations are unable to cope with disasters is based on both the notion that these organizations and the communities in which they are located are overwhelmed by disaster impact, and also by the fear that the employees of these organizations are so affected by disaster impact that their efficiency is reduced. Neither of these notions stand up well under close observation."

11. Page 38 -- The GAO report states "There does not appear to be a federal policy on providing accident response information to the general public ... the federal response to this lack of direction has generally been to discount the need for distribution of public information. Federal agencies have not required facility operators to include public information as part of their emergency plan except for details on when and how post-accident public information should be presented." We consider that these statements are misleading and provide an incorrect characterization of NRC policies and practices regarding information made available to the public. We believe it is better for evacuation plans to be detailed, communicated and implemented by knowledgeable professionals than to depend on the interpretation and translation of general planning information into specific case actions by members of the general public.

12. Page 43 -- The GAO report states "The warning times for natural disasters can often be measured in days or hours; the warning times for nuclear emergencies often will be measured in minutes." The contrast portrayed by this statement is misleading. To achieve a different perspective, consider other non-nuclear disasters such as transportation accidents, toxic chemical releases, explosions, fires, dam failures, bridge collapses, landslides, flash floods, and earthquakes all of which give little or no warning. Compare these situations to the most severe Class 9 accident release categories which provide time intervals between the onset of the hypothetical accident and the release to the atmosphere of 2 to 30 hours during which warning could be given. The latter contrast, particularly in light of the relative probabilities, should certainly give cause to re-think priorities on the part of those involved in disaster planning as compared to the statement in the GAO report.

GAO note: Page references in these appendixes refer to the draft report and do not necessarily agree with the page numbers in the final report.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

18 OCT 1978

Mr. William J. Anderson
Acting Director
General Government Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Anderson:

We have reviewed your draft report entitled, "Emergency Preparedness Around Nuclear Facilities Needs Improvement."

We have done no independent analysis which would support objections to the findings or the recommendations of the report. We are somewhat disappointed, however, that the report fails to address fundamental organizational questions which may underlie the specific inadequacies noted in the report. The most fundamental of these questions is whether agencies whose principal mission is to foster and expedite the establishment of nuclear facilities should be the same agencies charged with off-site nuclear emergency preparedness. There may well be an institutional conflict between these missions. A corollary question is whether preparedness for peacetime nuclear emergencies benefits from, or could benefit from, a closer association with other emergency preparedness programs such as the civil defense and natural disaster preparedness programs. Finally, the effectiveness of oversight of the accomplishment of off-site nuclear emergency preparedness planning by the Federal Preparedness Agency should be addressed.

These questions will clearly be under the jurisdiction of the Director of the new Federal Emergency Management Agency which was authorized by Reorganization Plan No. 3 of 1978, and which will be established early next year. The usefulness to him or her of your report on emergency preparedness would be enhanced by some consideration of the underlying reasons for the conditions noted therein, and of alternative assignments of responsibility for off-site nuclear emergency preparedness planning.

Sincerely,

Jim McIntyre

James T. McIntyre, Jr.
Director

(30038)

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