



February 1987

NUCLEAR WEAPONS

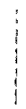
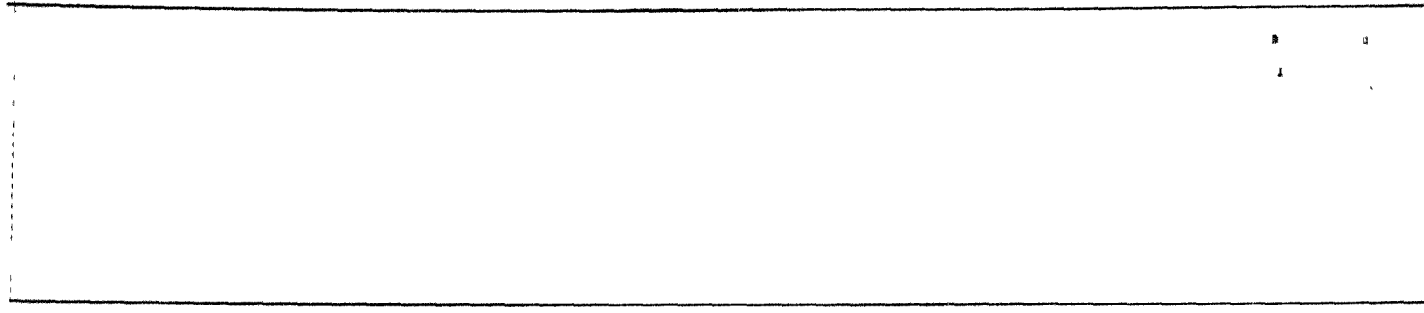
Emergency Preparedness Planning for Accidents Can Be Better Coordinated



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United States
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Washington, D.C. 20548

National Security and
International Affairs Division

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February 10, 1987

The Honorable Sala Burton
House of Representatives

The Honorable Ronald V. Dellums
House of Representatives

The Honorable Don Edwards
House of Representatives

As requested in your letter of April 5, 1985, we reviewed the Department of Defense's policies and practices for coordinating emergency planning for nuclear weapon accidents with states and localities. This report also contains information on potential nuclear weapon accident hazards, responsible organizations, and emergency response capabilities.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from its issue date. At that time, we will send copies to interested committees and other Members of Congress; the Secretaries of Defense, Energy, the Air Force, the Army and the Navy; and the Directors, Federal Emergency Management Agency and Office of Management and Budget. Copies will also be made available to other parties upon request.

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

The Navy plans to add ships to existing and new U.S. homeports. Some of the ships can carry nuclear weapons. Three Members of Congress expressed concerns about public safety in the event of a nuclear weapon accident. (See pp. 10 and 11.)

They requested GAO to (1) update a 1979 GAO report on Department of Defense (DOD) nuclear emergency preparedness planning, (2) determine the extent the Navy involves state and local governments in its emergency planning, (3) ascertain whether that involvement can be increased without jeopardizing national security, and (4) determine the extent policies and plans are consistent among the military services.

Background

DOD defines a nuclear weapon accident as a detonation; radioactive contamination; high explosive detonation or burning; or seizure, theft, or loss of a weapon or its components. (See p. 13.)

According to DOD and the Department of Energy (DOE), extensive safety measures have made the possibility of an accidental nuclear detonation virtually nonexistent. The United States has not had an accidental nuclear weapon detonation, but has experienced 32 lesser accidents. Twelve of those resulted in some radiological contamination; the last occurring in 1968. (See pp. 14 to 16.)

According to DOD and DOE, the most likely hazards are explosion or burning of the nonnuclear high explosives and the release of plutonium from the warhead. Experts agree that plutonium particles must be inhaled, ingested, or absorbed in the bloodstream through an open wound in order to cause physical harm. Should an accident occur, DOD and DOE response teams are available to react. (See pp. 16 to 18)

Results in Brief

Coordination and planning for nuclear weapon accidents with states and localities vary by service. The Navy and Army generally have not coordinated this planning as they have for other types of disasters because they believe to do so would compromise national security. The Air Force coordinates its emergency planning for all types of disasters. The Army recognizes the need for such coordination and is taking action to do so on a classified basis. DOD believes that while it is possible for Navy homeports to coordinate preparedness plans on an unclassified basis it is not possible to do so at nuclear weapon storage sites because of security constraints. (See pp. 28, 29, 30, 33 and 35 to 37.)

Principal Findings

Strengthening Emergency Planning

Since GAO's 1979 report on the need to better coordinate emergency planning with state and local governments, DOD has updated policies and instructions, and published accident response procedures. Also, DOD initiated a national nuclear weapon accident exercise program in which selected states and localities participated. (See pp. 22 and 23.)

Navy and Army installations generally do not coordinate the development of emergency plans for nuclear weapon accidents with state and local emergency preparedness offices because of national security concerns. For example, the Navy did not coordinate the plans for the 10 Navy installations GAO visited because officials believed to do so would violate DOD policy to neither confirm nor deny the presence or absence of nuclear weapons. (See pp. 28 and 30 to 33.)

Air Force officials maintain that nuclear-capable aircraft may land at any Air Force base; therefore, each base is required to coordinate closely with respective state and local emergency preparedness offices to develop and exercise nuclear weapon accident plans. In doing so, Air Force bases neither confirm nor deny the presence or absence of nuclear weapons. (See pp. 28 to 30.)

States and Localities Can Be More Involved

Some state and local authorities GAO visited desire more direct communication with Navy and Army installations in order to obtain information and understanding on such topics as planned responses, technical data on potential hazards, and assistance available to states and localities. They also believe participation in exercises will enhance mutual understanding of planned actions and response capabilities. (See pp. 28, 34 and 37.)

Moreover, a 1983 DOD national exercise simulating a nuclear weapon accident disclosed the need for coordinated planning for such accidents because of the complexities of the response required, confusion resulting from inadequate information flow, and the hazards of radioactive contamination. (See pp. 34 and 35.)

GAO concluded that communication and coordination were evident in the Air Force's unclassified preparedness planning practices for nuclear weapon accidents and in the military services' planning for other types

of disasters. The Army is unique in that it has a small number of installations capable of storing and handling nuclear weapons, and to coordinate planning on an unclassified basis could indirectly compromise security. Army installations are currently taking actions to coordinate and exercise preparedness planning with these authorities on a classified basis. By coordinating with state and local emergency preparedness offices on the basis that homeports can accommodate nuclear-capable ships, the Navy can interact more closely with these authorities. This can be done on an unclassified basis within the DOD policy to neither confirm nor deny the presence or absence of nuclear weapons. (See pp. 37 and 38.)

Recommendations

GAO recommends that the Secretary of Defense direct the Secretary of the Navy to ensure that homeports for nuclear-capable ships allow the opportunity for state and local authorities to coordinate emergency plans for nuclear weapon accidents by

- sharing unclassified plans and related information and
- allowing them to participate in exercising the plans. (See p. 38.)

Agency Comments

DOD, DOE, and the Federal Emergency Management Agency generally concurred with GAO's report. DOD, however, did not fully agree with the proposals in GAO's draft report. GAO agreed with some of the concerns raised by DOD and modified the recommendations accordingly. (See pp. 38 to 40.)

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Abbreviations

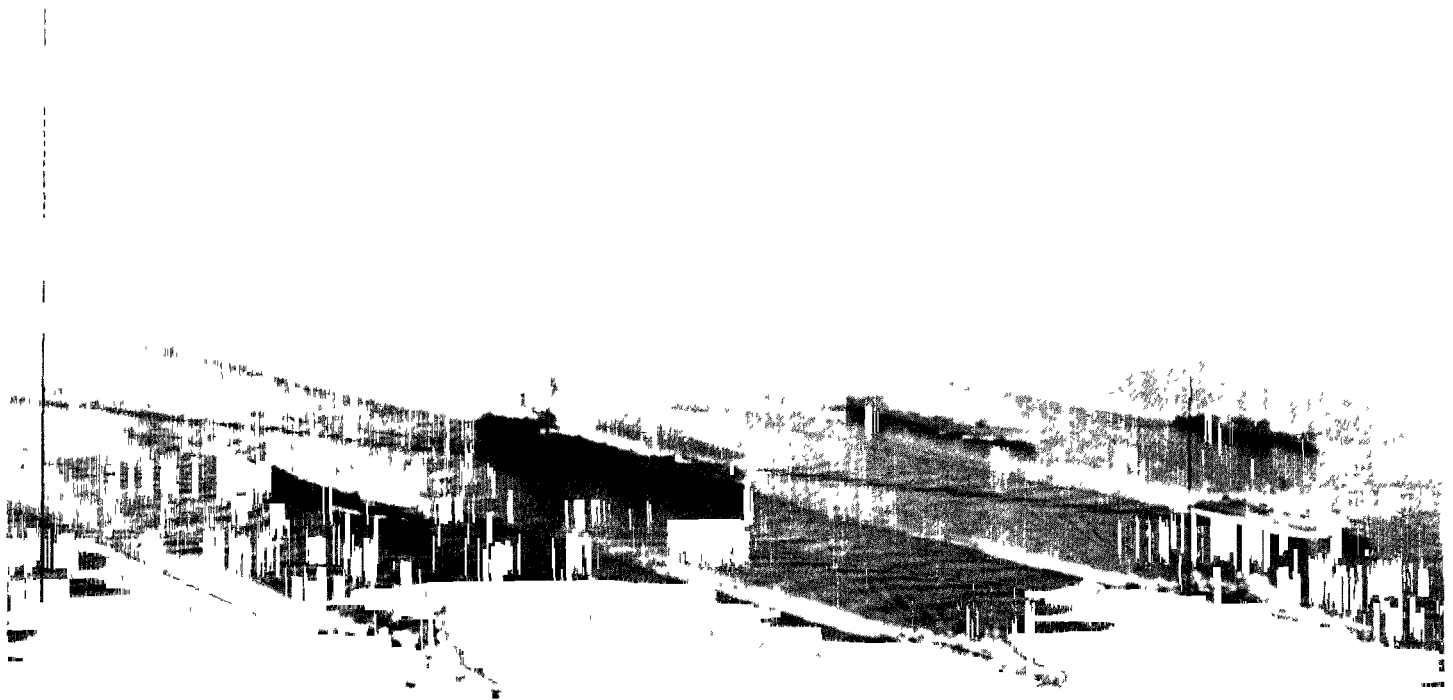
ARAC	Atmospheric Release Advisory Capability
DNA	Defense Nuclear Agency
DOD	Department of Defense
DOE	Department of Energy
FEMA	Federal Emergency Management Agency
GAO	General Accounting Office
HE	High Explosive
NARP	Nuclear Weapon Accident Response Procedures
NMCC	National Military Command Center
NUWAX 83	Nuclear Weapon Accident Exercise 1983
REM	Roentgen Equivalent Man/Mammal
SAC	Strategic Air Command

Introduction

The United States is in the midst of expanding the Navy's fleet to 600 ships by the 1990s. To accommodate this expansion, the Navy plans to increase the number of U.S. cities serving as homeports for certain types of surface combatant ships.¹

These combatant ships (see figs. 1.1 and 1.2) include vessels with nuclear-weapon capability, a fact that has created some safety concerns over the Navy's plans for homeport expansion. The new ports could begin receiving ships during the late 1980s and early 1990s.

Figure 1.1: U.S. Navy Battle Group Consisting of an Aircraft Carrier and Supporting Combatant Ships



Source: U.S. Navy.

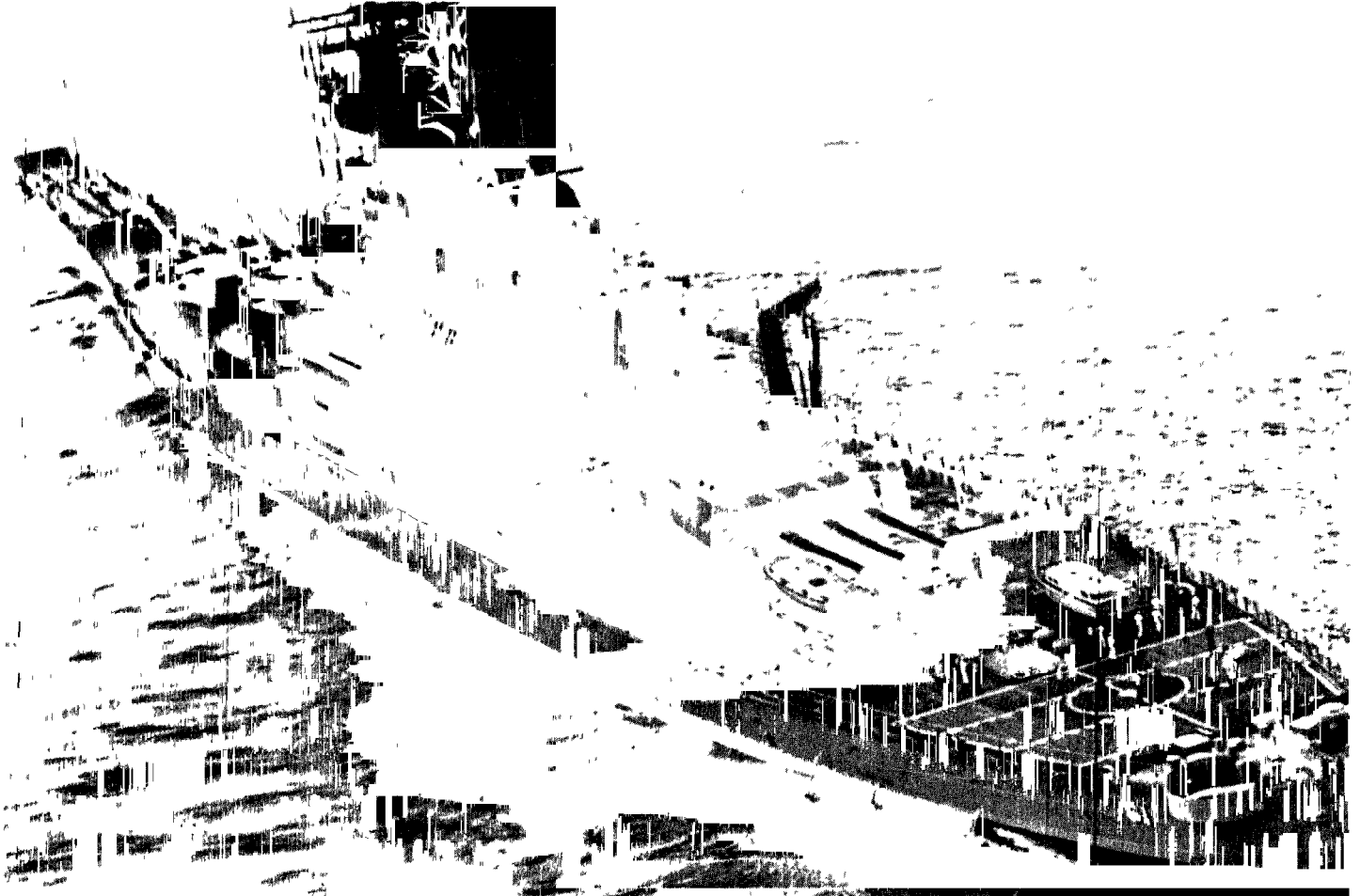
¹Frigates, destroyers, cruisers, battleships, and aircraft carriers.

With the expansion of the fleet into new and existing port areas, the importance of planning for potential nuclear weapon accidents has increased. This “emergency planning”—i.e., preparing in advance to implement those actions and procedures necessary to facilitate a rapid, successful response—includes providing for prompt notification of authorities and delineating those actions to be taken immediately to minimize hazards to the public. Thus, planning should be well coordinated among the Navy, states, and local governments beforehand to ensure that decisionmaking processes, resources, and response procedures are in place to react to a disaster

In April 1985, three Members of Congress from the San Francisco area, concerned about the public health and safety implications of basing additional ships that have the capability to carry and use a nuclear weapon in densely populated U.S. ports, asked us to update our earlier report² on emergency preparedness for areas around nuclear facilities (A synopsis of that report and our other related reports is in app. III.) The delegation asked us to focus on the current state of the Navy’s emergency planning with state and local governments for radiological emergencies. (See app. I.)

²Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies (EMD-78-110, March 30, 1979)

Figure 1.2: The Battleship U.S.S. Iowa



Source U.S. Navy

Navy Plans for Homeport Expansions and Additions

At present the Navy bases its combatant ships in several homeport areas. To accommodate the new vessels it will receive over the next decade, the Navy plans to place some combatant ships in present homeport areas and to place others at several other cities not now serving as homeports. Current plans call for the complement of combatants to be increased in Hawaii, at several homeports along the Pacific coast, including San Francisco Bay (see fig. 1.3) and Long Beach, California; and at homeports on the east coast, including Norfolk, Virginia. In addition, the Navy plans to introduce combatants at Staten Island, New York, various Gulf coast sites, and at Everett, Washington. (See app. II for a complete listing.)

Figure 1.3: Treasure Island - A New Homeport Near San Francisco, California



Source: U.S. Navy

What Is a Nuclear Weapon Accident?

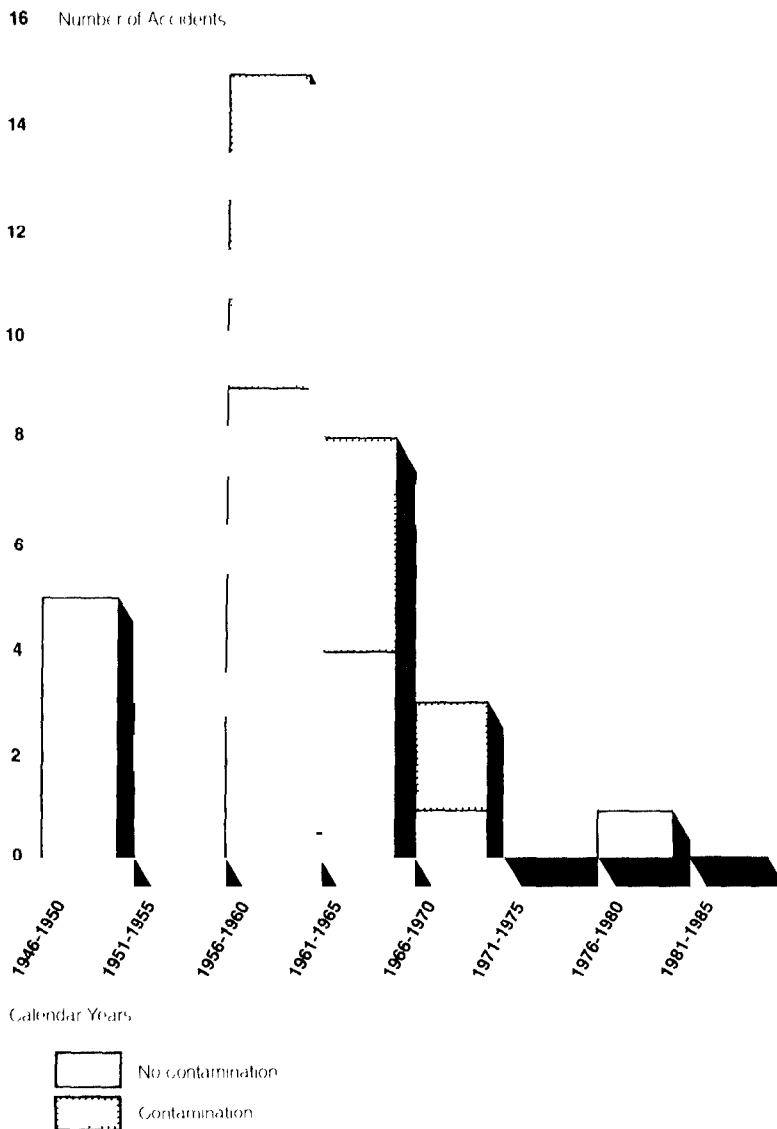
As defined by the Department of Defense (DOD), a nuclear weapon accident is an unexpected event involving nuclear weapons or their radiological components that results in:

- A nuclear detonation.
- Radioactive contamination.
- The nonnuclear detonation or burning of a nuclear weapon or its radiological components
- The accidental or unauthorized launching, firing, or use by U.S. forces (or U.S.-supported allies) of a nuclear weapon that can cause the outbreak of war

- Seizure, theft, loss (including jettisoning), or destruction of a nuclear weapon or its radiological component.
- A public hazard, actual or implied.

According to DOD documents, 32 accidents involving nuclear weapons have occurred (see fig. 1.4). Of these accidents, 31 occurred before 1969, largely on Air Force flights. None resulted in an inadvertent nuclear detonation, but some did create radiological problems. Since then the United States has had one nuclear weapon accident, but it did not result in any radiological release or contamination. The Navy has never had a nuclear weapon accident to occur on a ship while in port or near civilian populations, nor has it had an accident that released radioactivity. The Army has never had a nuclear weapon accident. Appendix V has more discussion on nuclear weapons accidents.

Figure 1 4. U.S Nuclear Weapons
Accidents (1946 1985)



The services experience lesser events that do not qualify as nuclear weapon accidents. Known as nuclear weapon incidents, they are unexpected events involving nuclear weapons, test and training weapons, dummy bomb units, nuclear weapon facilities, components, or associated test and handling equipment that do not fall in the nuclear weapon accident categories. According to a Navy official, between January 1965 and December 1985, the Navy reported 630 such incidents, of which 266

involved an actual nuclear weapon. Of these, 66 occurred on Navy surface ships while in port.

What Are the Potential Hazards From Nuclear Weapon Accidents?

The worst nuclear weapon accident is, of course, the unintended detonation of the nuclear warhead. According to DOD and Department of Energy (DOE) sources, the probability of an accidental detonation of a nuclear weapon warhead is virtually nonexistent because extensive safety precautions have been taken in the design, handling, storage, and maintenance of weapons. Given this, DOD and DOE believe that, though remote, the greatest risk of a nuclear weapon accident is the detonation of the conventional (nonnuclear) high explosive (HE) and the release of plutonium—a solid metal—by impact, fire, and/or the detonation of the conventional explosive. They believe a new “insensitive” type of HE being used in newer weapons is more resistant to accidental detonation. In addition, some older weapon types are being phased out or, according to a Navy official, are being fitted with this new explosive. This feature should further reduce the risk of explosive detonation and radiological contamination in a nuclear weapon accident. Additional information on nuclear weapon accident risks is in appendix V.

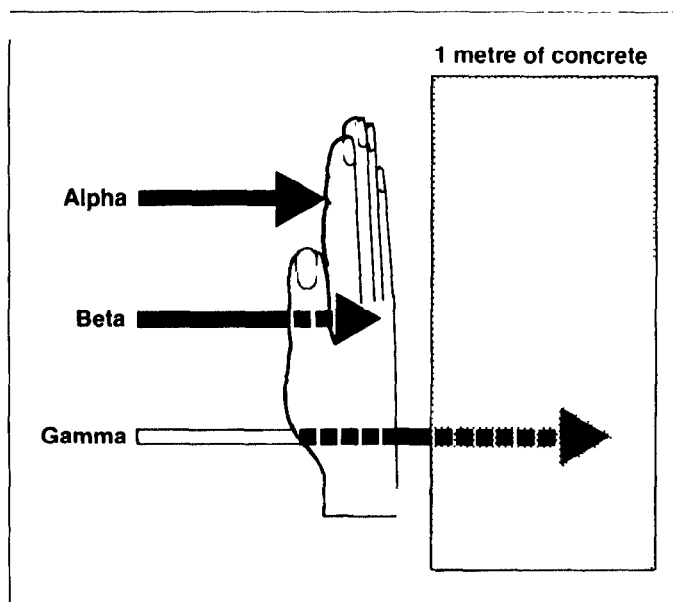
The potential hazards from a nuclear weapon’s HE, according to a DOD and DOE document, are similar to those that can result from accidents with conventional weapons. Accidental detonation of the high explosives could scatter fragments of metal and unstable-undetonated high explosives over an area up to about 2,000 feet in radius. In a fire, the HE could detonate; melt, flow out of the warhead, and resolidify into a volatile substance, or burn, producing toxic gases and residue.

Plutonium emits alpha radiation and, in an accident, it could be released into the environment. Alpha particles radiate 1 to 2 inches in air and are difficult to detect, but are incapable of penetrating clothing or the outer layer of unbroken skin. Their effects last for years. DOD, DOE, and several scientific community sources³ agree that alpha particles normally must be inhaled, ingested, or absorbed into the blood-stream through an open wound to cause physical harm. If absorbed internally, these particles are carried much like calcium to the lungs, liver, kidneys, and other body parts and are deposited in the bones. They attack surrounding tissue, causing irritation and thus may lead to malignancy.

³These sources include reports by the World Health Organization, the Nuclear Energy Agency—a subcomponent of the Organisation for Economic Co-operation and Development (Paris, France)—and discussions with a senior health physicist with the Nuclear Regulatory Commission and a radio biologist with the Environmental Protection Agency.

In contrast, other types of radiation, beta and gamma, created by a nuclear warhead detonation and nuclear reactor operations have different penetrating power (see fig. 1.5) and effects in the body. Beta particles may radiate several feet in the air and up to half an inch in body tissue. Clothing normally provides adequate protection from beta radiation in the air. Concentrations of beta particles on the skin, however, will cause burn-like irritations and can be hazardous to body organs and glands close to the skin. If taken into the body, beta-emitting particles irritate the walls in the intestinal tract and destroy white blood cells. Gamma rays, in general, have ranges of hundreds of feet, and can readily penetrate living and nonliving matter. Dense materials, such as lead and steel, can shield against gamma radiation. Inside the body gamma radiation can destroy cells and upset normal body functions. High doses may cause loss of hair, nausea, and aplastic anemia and may affect the bone marrow, spleen, lymph nodes, and the manufacture of red and white blood cells.

Figure 1.5: The Penetrating Power of Radiation



Source: International Atomic Energy Agency

Plutonium Dispersal

According to DOD and DOE, in the event of a nuclear weapon accident resulting in the release of alpha-emitting particles into the environment, the dispersal pattern for such contamination would be influenced by such factors as the

- nature of the accident, whether of fire or HE detonation origin;
- type and number of weapons involved;
- amount of plutonium aerosolized,
- direction, speed, and currents of the wind and other weather conditions following the accident;
- geography around the accident site; and
- lapsed time after an accident occurs.

Consequently, the magnitude of the hazard and the potential risk to the general public would depend upon these dispersal factors, as well as the proximity of populated areas to the accident site.

Responsibilities for Planning for and Responding to Nuclear Weapon Accidents

In the event of a nuclear weapon accident, the federal government seeks to render the weapon safe from nuclear and conventional detonation, recover all classified material, and ensure that affected areas are restored to normal use. It is therefore federal policy that governmental units associated with nuclear weapons have accident response plans that will meet these objectives.

DOD is charged with the safety of nuclear weapons and components in its custody and the protection of life and property from any health or safety hazards that could ensue from a nuclear weapon accident. Designated DOD units and DOE are required to maintain nuclear weapon accident response capabilities. Appendix VI contains a fuller discussion of response capabilities, with emphasis on DOD and DOE.

When possible and when national security permits, DOD is required to cooperate with the Federal Emergency Management Agency (FEMA) in developing emergency plans with state and local authorities for fixed DOD facilities where radiological accidents could occur. FEMA is responsible for establishing and coordinating policies for civil emergency planning, management, mitigation, and assistance in the event of man-made or natural disasters and for stimulating participation by state and local governments in emergency preparedness programs. Thus, FEMA's primary tasks are to coordinate state and local requests for federal assistance and to ensure that responses by federal, state, and local officials are coordinated and mutually supportive.

The authority and responsibility for public safety rest with state and local officials—the governor primarily. The governor is expected to direct measures that will ensure the health, safety, and welfare of the people within the territorial limits of the state

Objectives, Scope, and Methodology

Three Members of Congress from the San Francisco area requested us to study the present state of the Navy's emergency planning with state and local governments for radiological emergencies. They asked that we focus on the planning for potential accidents involving nuclear weapons and material⁴ by

- identifying relevant actions DOD has taken since our 1979 report on emergency preparedness around DOD and DOE nuclear facilities;
- determining the extent to which the Navy includes state and local governments in its radiological emergency planning;
- ascertaining if Navy policies and plans regarding radiological emergencies are consistent with the other DOD services, and
- determining whether the involvement of state and local governments in emergency planning can be increased without jeopardizing national security

During our review, which was conducted from May 1985 through July 1986, we visited the headquarters offices of DOD, Navy, Air Force, Army, DOE, and FEMA; 2 FEMA regional offices; the Lawrence Livermore National Laboratory, 17 field installations of the military services (including 2 ships), 3 state governments, and 13 local governments. At these locations, we gathered data during interviews and briefings and reviewed regulations, instructions, directives, manuals, emergency plans, exercise reports, studies, and management reports. We also reviewed relevant independent studies performed by the scientific community and tested nuclear weapon accident response capabilities by selectively inventorying equipment and verifying the availability of personnel to response teams. We compared emergency planning procedures and practices among the services and various types of emergency plans, the views of DOD, DOE, and the scientific community concerning the nature of potential accident hazards; and the opinions of DOD, states, and localities on the extent of planning coordination desired and currently taking place. Appendix IV contains a more detailed discussion of our scope and methodology

⁴In a subsequent meeting with the requestors' representative, it was agreed that our study would emphasize emergency planning for accidents involving nuclear weapons

Chapter 1
Introduction

This review was performed in accordance with generally accepted government auditing standards.

Improvements Have Been Made in Emergency Planning for Nuclear Weapon Accidents

In 1979 we reported that areas around nuclear facilities should be better prepared for radiological emergencies. We recommended that the Secretary of Defense

- To the extent that national security is not jeopardized, require that people living near nuclear facilities be provided information about the potential hazards, the emergency actions planned, and the actions they should take in the event of an accidental radiological release.
- To the extent national security is not jeopardized, require commanders at DOD facilities to develop with state and local government agencies having emergency responsibilities formal, explicit agreements that clearly delineate roles, responsibilities, and capabilities and include provisions encouraging their participation in drills with the facilities.
- Develop methods of interacting with states in peacetime nuclear emergency response planning where the classification of nuclear facilities is justified on national security grounds. We suggested that for those facilities that already were or could become nuclear-capable, a few civilian officials could be dealt with on a classified basis or emergency notification procedures could be established without confirming or denying the existence of nuclear materials.

In commenting on that report, DOD stated it did not believe it was feasible to provide information regarding radiological accidents to people living near nuclear facilities. However, DOD did take a number of actions on the other recommendations. DOD improved its overall accident response planning guidance and established a national nuclear weapon accident exercise program to include participation by federal, state, and local government agencies. Further, in 1981 DOD directed the Defense Nuclear Agency (DNA) to provide DOD components additional guidance for developing preparedness plans with state and local governments. Interim guidance was issued in April 1986.

DOD Guidance and Service Response Plans Improved

Since 1979, DOD has updated its policies and guidance regarding coordination and contingency planning with state and local officials and such other subjects as assistance to others, weapon safety, accident notification, and use of DOD resources in peacetime emergencies.

Policy regarding coordination and contingency planning with state and local officials was expanded to require DOD components to cooperate with FEMA, where possible and within national security constraints, in developing radiological emergency plans with state and local authorities for those fixed DOD facilities where an accident involving radiological

material could occur. The policy also required DOD to encourage the conduct of radiological emergency exercises to ensure adequate response in case of an accident. In support of this endeavor, local military installations are required to cooperate, within current security classification guidelines, with state and local authorities during exercises.

The revised policy cautioned, however, that coordination and contingency planning with state and local officials does not relieve DOD of its basic policy of neither confirming nor denying the presence or absence of nuclear weapons. In situations where classified information on the presence of weapons is required to develop emergency plans, DOD is to provide only that information necessary and when its release has been determined to be in the best interest of national emergency preparedness planning after due consideration of national defense consequences. Such classified information is to be provided only to properly cleared individuals within state and local governments and who have a need to know.

Also, DNA published the Nuclear Weapon Accident Response Procedures (NARP) Manual, a single document that summarizes the procedural guidance for military units that respond to nuclear weapon accidents. This manual also serves to aid nuclear-capable military installations in developing their nuclear weapon accident response plans. In addition to providing technical guidance concerning radiological equipment, radioactive material, contamination, and decontamination, the manual describes the general responsibilities of other agencies, including state and local governments, and identifies DOD and DOE resources that are available to respond to a nuclear weapon accident. Appendix VI contains further discussion of the various nuclear weapon accident response forces.

Air Force Improvements

During the 1980s, the Air Force improved its emergency planning for nuclear weapon accidents. Regulations governing disaster preparedness were amended in 1984 by adding nuclear weapon accident response procedures, establishing the Strategic Air Command (SAC) as the primary Air Force authority for nuclear weapon accidents in the continental United States, and directing each base to develop and coordinate nuclear accident response plans with states and localities.

In addition, 10 command installations were made regional response forces. Furthermore, SAC developed detailed response procedures, issued in 1985, as the servicewide Nuclear Accident Response and Recovery Plan. Essentially an adaptation of the NARP Manual, this plan describes

the actions Air Force accident response forces in the continental United States must take, as well as those interactions with other military, federal, state, and local agencies necessary to coordinate responses for an Air Force nuclear weapon accident

Army Improvements

During the 1980s, the Army also updated its regulations on nuclear weapon safeguards to incorporate changes to prescribed weapon management and handling procedures and to provide specific accident response and assistance procedures. The regulations required the Army Materiel Command to maintain a service response force. In addition, in 1985 this command published a Disaster Control Plan that sets forth specific roles and responsibilities for responding to a nuclear weapon accident and directed its Depot System Command and nuclear-capable activities to prepare and maintain their own Nuclear Accident/Incident Response and Assistance Plans, which were published in 1985. Previously, in 1984, the Depot System Command had published an emergency response plan for use by commanders at the scene of a nuclear weapon accident.

Navy Improvements

The Navy, in 1981, revised its regulations governing emergency planning for and responding to nuclear weapon accidents to incorporate DOD policies; in 1983, certain definitions and public affairs guidance were updated. Also, the Navy began using the NARP Manual as guidance for naval forces designated to respond to nuclear weapon accidents. Furthermore, in 1984, the Navy updated its regulations on the release of information concerning nuclear weapons, emphasizing that Navy personnel would violate provisions of the Uniform Code of Military Justice should they either confirm or deny the presence or absence of nuclear weapons. However, the regulations recognized that, in the event of a nuclear weapon accident, specified persons may officially confirm the presence of the weapon or component involved

National Nuclear Weapon Accident Exercise Program

Since 1979, DOD has established a national nuclear weapon accident exercise program. Jointly sponsored by DOD, DOE, and FEMA, and directed by DNA, the program includes full-field and command-post exercises scheduled through 1990. Field exercises include the deployment of response personnel and equipment, while command-post exercises test only the command and control elements. These exercises have generally included participants from federal, state, and local government agencies,

in addition to the hosting military service's response force—a role that has been rotated among the services.

Guidance for Coordinating With State and Local Governments

In 1981, when updating its policies and guidance, DOD directed DNA to provide DOD components further guidance to use in developing emergency preparedness plans with state and local authorities for those fixed DOD facilities where the potential exists for an accident involving radioactive materials. Interim guidance was issued in April 1986 and the service chiefs were asked to initiate actions within their departments to promulgate the guidance.

In 1983 FEMA attempted to develop a guide for state and local governments to use in planning radiological emergency responses to DOD and DOE nuclear accidents. However, DOD and DOE objected to FEMA doing so because they believed that, by law, this was their responsibility. Also, they believed it would be an unnecessary expenditure since expertise and access to the information necessary to develop such guidance already existed in DOD and DOE.

Instead of the FEMA initiative, DOD and DOE proposed that they jointly prepare guidance for state and local governments to provide the best possible information consistent with the policy to neither confirm nor deny the presence or absence of nuclear weapons. DOD and DOE planned to submit the guidance to FEMA in early 1984.

Subsequently, DOD and DOE decided not to proceed with the joint effort. They concluded a generic document would not be practical for the wide range of facilities and activities in question. The facilities include types that are unique in mission, operational activities, siting, and accident potential. Instead, they agreed to provide guidance to their respective activities. DOE issued its guidance in November 1985 and, DOD issued interim guidance in April 1986.

Conclusions

Since 1979, DOD and the services have taken a number of actions to improve emergency planning for nuclear weapon accidents. These actions include updating policies, guidelines, and accident response plans, establishing a national nuclear weapon accident exercise program, which has included participation by state and local officials; and developing guidance for DOD components to use when developing emergency preparedness plans with states and localities. However, as discussed in chapter 3, we believe additional actions are needed.

Agency Comments

DOD concurred and emphasized that it is required, when possible and when national security permits, to cooperate with FEMA in developing emergency plans with properly cleared state and local authorities who have the appropriate limited access authorization to coordinate on emergency radiological planning. DOE advised that it currently was working with DOD and FEMA to develop a training course to support close coordination with state and local emergency response authorities in basic emergency planning and preparedness activities for nuclear weapon accidents. This course will also provide these authorities a better understanding of radiological, safety, security, and management aspects of an accident involving nuclear weapons. The goal is to present a trial course in early 1987 and, once established, offer the course twice a year through FEMA.

Military Services' Emergency Planning Coordination With States and Localities Differs

The possibility, however remote, that a nuclear weapon accident may occur and result in radiological contamination supports the development and coordination of emergency plans to mitigate the effects of such an accident. Emergency planning helps ensure that decisionmaking structures and resources will be available when needed and describes the process for triggering their use. Unless DOD installations that are nuclear capable coordinate their planning with state and local governments, there is little assurance that these decisionmaking structures will be in place before an accident occurs and that response capabilities can be applied to mitigate its effects.

The military services follow different practices regarding the extent they involve states and localities in emergency planning. Air Force activities coordinate planning with states and localities, while the Army and Navy, for security reasons, generally exclude state and local governments from a coordinated planning effort.

We also found that.

- Some state and local emergency preparedness officials desire more communication in emergency planning for accidents involving nuclear weapons.
- A national nuclear weapon accident exercise showed a need for more coordination.
- Military and civilian authorities are coordinating emergency planning for other disasters.
- Emergency planning coordination for accidents involving nuclear weapons is achievable without violating DOD security policy.

Air Force Interacts With State and Local Governments

Air Force guidance requires base commanders to make mutual disaster support plans with local and state authorities. Such plans must include procedures for providing Air Force assistance to these civilian authorities during a nuclear weapon accident. Though the guidance does not place security constraints on interactions with civilian officials, according to Air Force officials, it does require Air Force bases to comply with the policy to neither confirm nor deny the presence or absence of nuclear weapons.

Air Force bases interface directly with state and local governments in their vicinities concerning emergency preparedness for nuclear weapon accidents. Air Force officials maintain that because nuclear-capable airplanes may land at any Air Force base, each base should have a nuclear

weapon accident response plan and joint response support agreements with state and/or local officials. Officials stated that through this practice, the Air Force, while neither confirming nor denying the presence or absence of nuclear weapons, publicly admits that strategic missile bases and bases with landing strips are nuclear-capable. As a result, Air Force bases coordinate unclassified nuclear weapon accident emergency planning, enter into joint written agreements, and share information in bases' accident response plans with state and local governments.

We reviewed 27 agreements between Strategic and Tactical Air Command bases (mainly in SAC) and state and local governments. Some of these agreements contained explicit language concerning the possible presence of nuclear weapons, nuclear material, or the possible occurrence of accidents adversely affecting public safety and health. According to Air Force, state, and local officials, the specific wording of the agreements may vary due to local preference, but the common understanding by all parties is that the agreements pertain to nuclear weapon accidents.

Emergency preparedness officials at some of the bases visited stated that their nuclear weapon accident emergency plans were provided to local officials for civilian planning purposes. Local officials we contacted corroborated these statements. Also, one base official told us he had attended meetings in nearby communities, where he openly discussed the nature of his base's plan and the coordination of planning between the base and local governments.

In addition, Air Force officials stated that civilian authorities often observe or participate in nuclear weapon exercises. Air Force regulations require each base to conduct a major accident exercise each quarter. One exercise must simulate a nuclear weapon accident (see fig. 3-1). Also, SAC bases must conduct two additional major accident exercises each quarter, of which one must simulate a nuclear weapon accident. Air Force officials said that the frequency and degree of state and local officials' participation in the exercises were left to the discretion of local commanders.

Figure 3.1: Air Force Initial Response Force Members Moving Into Place to Begin Monitoring for Radiation During a Nuclear Weapon Accident Exercise



Source: U.S. Air Force

Navy Practices Generally Exclude State and Local Governments

Navy practices regarding nuclear weapon accident emergency planning generally exclude state and local government authorities. Emergency plans for nuclear weapon accidents were in place for 7 of the 10 Navy installations we visited and draft plans covering the other 3 had been prepared. However, as a matter of security, the installations had not coordinated or exercised these plans with state and local officials. The Navy believes that the prohibition against either confirming or denying the presence or absence of nuclear weapons at a specific location precludes, in practice, any open communication or planning with state and local governments. Also, Navy officials believe that entering a mutual support agreement would confirm the existence of such weapons.

Subsequent to our review, however, in July 1986, one Navy command we visited had sponsored a nuclear incident seminar for northeastern states to discuss current Navy concepts, operating procedures, and responsibilities for nuclear incident response. This seminar did not address any specific Navy homeport or weapons site. Senior representatives and persons having nuclear emergency planning responsibilities

from these states were invited. The seminar covered such topics as radiation accident response capabilities, public affairs, disposal of explosive ordnance, and communication capabilities.

As a rule, Navy installations do not exercise emergency plans for nuclear weapon accidents with state and local governments. However, emergency preparedness officials in one state we visited had participated with the Navy in a national nuclear weapon exercise in 1983. The exercise, known as NUWAX 83, was conducted at the DOE Nevada Test Site and included not only Navy and other federal agencies' personnel but also state and local government participants. This exercise, which simulated an airborne Navy nuclear weapon accident near a civilian community (see fig. 3.2), tested the participants' capabilities to accomplish such responses as accident notification, weapons recovery, site security, contamination detection and control, medical services, and public affairs, but not their capabilities to restore an accident site to normal use.

Figure 3.2: Simulated Helicopter Crash With Nuclear Weapon Aboard During NUWAX 83



Source Defense Nuclear Agency

In contrast, the Navy does coordinate its emergency preparedness plans for natural and other man-made disasters with state and local governments. Joint agreements had been signed and exercises had been established involving Navy and local and/or state authorities. Also, the installations had joint support agreements with localities to provide such services as firefighting in an emergency.

Army Practices Similar to Navy's

Army practices regarding preparedness planning for nuclear weapon accidents are similar to Navy practices. Army guidance requires officials of nuclear-capable installations to coordinate emergency response procedures with local communities that might be affected by an accident or that might be called upon to assist. Because of the sensitivity of the subject, however, these installations are cautioned to limit coordination to carefully selected local authorities. Information must be expressed in terms of emergencies involving the installations' conventional ammunition mission. Installation officials are instructed not to divulge classified information; they are cautioned to give only information considered essential for adequate advance planning and are to advise community officials that such information may not be released to the public.

Officials said that the Army does not confirm or deny the presence or absence of nuclear weapons at its installations. They maintain that DOD security policy prevents them from discussing nuclear weapons with civilian authorities or from coordinating emergency planning for nuclear weapon accidents with such authorities unless they have been properly cleared. The one field activity we visited had invited a state official with proper national security clearance to observe an on-base exercise, but this official did not attend.

Also, officials said that the Army does not initiate formal agreements with states or localities relating to nuclear weapon accidents. However, the field activity we visited had agreements to provide services such as police, fire, rescue, and emergency hospital care during other disasters. We found that this installation had a joint agreement with a local civilian hospital to treat accident victims. While nuclear weapon accidents were not specifically discussed in the agreement, local government officials said it was understood that victims of radiation accidents might be sent to this hospital.

Army officials advised us that the Army fully supports coordination of planning and participation by civil authorities in exercises for nuclear weapon accidents. However, publicly identifying the small number of installations capable of handling and maintaining nuclear weapons may jeopardize security. Army officials are working to obtain proper clearances for state and local officials so they can become familiar with the plans and participate in exercises.

State and Local Emergency Preparedness Officials Desire More Communication

State and local authorities have primary responsibility for public health and safety for their citizens. State and local disaster preparedness officials we visited believe that should a nuclear weapon accident occur on a Navy or Army base, they would need accurate, timely information on the likely hazards to their communities. Some of these officials also believe that, under current conditions, this information would come slowly and that more communication with Navy and Army activities beforehand could promote mutual understandings of respective response plans and capabilities. This communication could also help build mutual trust, adding assurance that they would be promptly alerted. Other state and local officials believe military installations and other federal agencies will respond to a nuclear weapon accident; hence, these officials give emergency planning for such accidents a relatively low priority among other potential disasters.

Some state and local officials believe that unclassified information and dialogue on the following topics are essential to understanding and developing mutually supportive emergency plans.

- Availability of military support for local assistance after an accident
- Plans and capabilities for treatment of radiation effects
- Technical data on potential hazards and applicable protective measures.

In addition, local officials believe it would aid their understanding to at least observe, if not participate in, local unclassified Navy and Army emergency response exercises regarding nuclear weapon accidents. In support of this view, officials in two states we visited told us they had benefitted by participating in national nuclear weapon accident exercises.

National Nuclear Weapon Accident Exercise Showed Need for Coordination

NUWAX 83 affirmed the necessity for emergency planning and coordination between military officials and civil authorities. One conclusion in the exercise report was that a prompt, effective, coordinated reaction will depend on the degree of planning and mutual knowledge of responsibilities and capabilities established before an accident. Coordinated planning is necessary because of the complexities of the response required, the initial confusion resulting from an inadequate information flow, the hazards to life, and the threat of radioactive contamination.

Another conclusion in the report was that military installation commanders should plan to coordinate or interface with state and local officials during radiological accident exercises within the limits permitted.

accidents, but it does not specify a similar need at the local government level. Local, as well as state, authorities have responsibilities to protect the population should an accident occur and the hazards spread into the local community

Some local officials we visited expressed needs for more planning information on the hazards of nuclear weapons accidents and protective measures. Other local officials believed they had insufficient information about federal accident response capabilities to make decisions on their own planning needs. Moreover, NUWAX-83 affirmed the need for coordinated emergency planning with local officials in such areas as accident information flow, hazards to life, threat of radioactive contamination, jurisdiction at the accident site, and site restoration. In this respect, local officials at one Air Force base we visited stated they had received information on these subjects from the Air Force which had enhanced their preparedness.

Conclusions

No guarantee exists that nuclear weapon accidents involving radiological contamination will not occur in the future. Thus, to facilitate a prompt and coordinated response, emergency planning for this type of disaster should be coordinated among federal, state, and local agencies, as it is for other types of natural and man-made disasters. State and local emergency preparedness officials desire more communication. The need for this coordination has been confirmed by the results of a recent national nuclear weapon accident response exercise.

Since the release of radioactive material from a nuclear weapon accident could be instantaneous and possibly spread to public areas, emergency planning must be in place before an accident occurs. Also, since state and local authorities are primarily responsible for public safety, this planning should be fully coordinated among all parties that may be called on to respond to such emergencies. To be prepared to make proper response decisions on actions to protect the public in the event of an accident, state and local emergency preparedness officials should have sufficient knowledge of such subjects as the nature and extent of radiological hazards, appropriate protective measures, and service accident response procedures and capabilities.

Air Force installations have accomplished this coordination in much the same way they have for other disasters—by sharing unclassified emergency planning information with state and local officials and allowing them to participate in response exercises.

While Army and Navy installations also coordinate response planning for other types of disasters with states and localities, they do not do so with respect to planning for nuclear weapon accidents. They contend that to do so would violate DOD security policy. We recognize that planning coordination for Navy and Army nuclear weapon storage sites can only be done on a classified basis with properly cleared officials. However, we believe the Navy can coordinate plans with state and local officials on an unclassified basis where homeports accommodate nuclear-capable ships because the identity of such ships is unclassified. Moreover, Army installations are taking actions to involve state and local officials in preparedness planning and exercises on a classified basis.

Recommendations

We recommend that the Secretary of Defense direct the Secretary of the Navy to ensure that officials at its homeports for nuclear-capable ships allow the opportunity for state and local authorities to coordinate emergency plans for nuclear weapon accidents by

- sharing unclassified planning information regarding such factors as (1) the potential hazards associated with such accidents, (2) accident notification policies and procedures, (3) DOD response capabilities, and (4) procedures for requesting assistance and
- allowing for state and local participation in installation response exercises.

Agency Comments and Our Evaluation

In its comments on a draft of this report, DOD agreed that the military services differ in the extent they involve states and localities in emergency planning for nuclear weapon accidents and that Army and Navy installations participate less than Air Force bases. DOD stated that the draft report implied Air Force installations coordinate with state and local governments outside their vicinity, which is not the case. The report was clarified.

DOD agreed that more coordination is achievable without violating DOD security policy. It stated that the Army and Navy are properly interpreting the DOD and DOE nuclear weapon classification guide by ensuring that participation in nuclear weapon emergency preparedness planning at storage sites be done on a classified basis. DOD stated that, in accordance with the guide, the identity of such installations as nuclear weapon storage sites is classified information. It also stated that although it is possible to coordinate planning with uncleared officials at bases and homeports that can accommodate nuclear-capable planes and

by security classification guidelines and the ability of the local governmental agencies to participate. The report stated that although the DOD policy of neither confirming nor denying the presence or absence of nuclear weapons constrains accident planning, there is a need for interaction between the military services and state and local governments. To enhance nuclear weapon accident coordination, military installation commanders must be provided clear guidance and assistance to enable them to plan effectively with their civilian counterparts.

Military and Civil Authorities Coordinate Planning for Other Disasters

Military installations are coordinating their emergency planning for disasters other than nuclear weapon accidents with state and local authorities. The military installations and the state and local agencies we visited had developed detailed plans for responding to natural and man-made disasters such as fires, floods, earthquakes, accidents involving hazardous material, and radiological emergencies other than those involving nuclear weapons. Most of these plans contained common provisions indicating a mutual understanding of roles and responsibilities, such as procedures and detailed call lists for notifying appropriate agencies and requesting assistance in responding to such emergencies. In addition, many of the military installations had entered into mutual disaster assistance agreements (written and unwritten) with state and local government emergency preparedness organizations. For example, some of these agreements covered such services as fire and police assistance

Coordination Achievable Without Violating DOD Security Policy

We discussed the policy to neither confirm nor deny the presence or absence of nuclear weapons with DOD, Navy, and Army officials. They did not believe nuclear-capable Navy and Army installations can coordinate their planning for nuclear weapon accidents with state and local officials without violating the policy. Navy officials stated, for example, that the fact that a naval weapon station is nuclear capable is classified even if the presence of nuclear weapons is not revealed. Also, Army officials stated that due to the small number of Army installations currently capable of handling and storing nuclear weapons, all Army installations would need to be considered nuclear capable in order not to reveal the presence of weapons at any one installation.

The Joint DOD and DOE Nuclear Weapon Classification Guide states that the capability to store or handle nuclear weapons at any U.S. military installation and the identification and location of specific nuclear-capable units are unclassified when the presence of nuclear weapons is not revealed. However, identification of any installation as a nuclear

weapon storage site reveals the presence of nuclear weapons and is classified.

DOD told us that the Army and Navy properly interpreted the joint DOD and DOE classification guidance by ensuring that installations participate with state and local governments in emergency preparedness planning for nuclear weapon accidents on a classified basis. DOD stated that in accordance with the classification guide, the identification of any specific installation (weapon station, base, fort, etc.) within the United States or its territories as a nuclear weapon storage site is classified at the confidential, formerly restricted data level, regardless of whether or not the presence of nuclear weapons is revealed. DOD further stated that although it is possible to conduct nuclear weapon emergency preparedness planning with unclassified officials at locations where a nuclear-capable unit might visit (Air Force base, Navy homeports), it is not possible to conduct similar planning at an unclassified level at a "weapon storage site."

We recognize that the identification of Navy and Army nuclear weapon storage sites is classified information. We also recognize that the Army is unique since it has a small number of installations capable of storing and handling nuclear weapons; thus, to coordinate planning on an unclassified basis could inadvertently compromise security. Also, the Army has undertaken an initiative to obtain national security clearances for those state and local emergency preparedness officials associated with their installations to allow discussions on nuclear weapon accidents and preparedness planning and participation in exercises.

However, we believe officials at Navy homeports for nuclear-capable ships can involve state and local officials in emergency planning for nuclear weapon accidents on an unclassified basis without compromising national security. We believe this would allow an opportunity for emergency planning with state and local officials similar to that of Air Force bases which accommodate aircraft capable of carrying nuclear weapons.

The interim DOD guidelines for coordinating radiological emergency planning with state and local authorities (see ch. 2) represent a positive step toward improving this coordination. While this guidance provides for coordination in the above areas with respect to state authorities, it falls short with respect to local authorities. The guidance authorizes DOD components to interface with properly cleared senior state officials in coordinating emergency preparedness planning for nuclear weapon

ships, it is not possible to conduct such planning at nuclear weapon storage sites. We recognize the distinction between storage sites and other types of facilities, such as homeports, and have clarified the report.

DOD also noted that its instruction requires installations to cooperate, within the limits of current guidelines, with state and local officials when exercising the plans. We recognize that requirement in chapter 2 of this report. However, as also discussed, the Army and Navy installations we visited were not coordinating and exercising the plans with those officials—citing security concerns.

DOD said that interim guidance now with the services, expected to be published in December 1986, authorizes all DOD components to coordinate planning for nuclear-related emergencies with properly cleared senior state officials. DOD also stated that special radiological preparedness planning by local officials is not necessary because the timing release characteristics of postulated accidents are such that existing local governments' general purpose emergency response plans suffice. They noted that the guidance does not preclude coordinating with local authorities on an unclassified level.

As discussed in this chapter, the interim guidance authorized DOD components to interface emergency preparedness planning for nuclear weapon accidents with properly cleared senior state officials, but it does not specify a similar need at the local government level. We believe local officials, as well as state officials, need to be involved in special radiological preparedness planning. Radioactive material can quickly spread beyond an installation, depending on such factors as the number and type of weapons involved, weather, geography, and the proximity to nonmilitary areas. To be prepared to participate in emergency response activities, local officials should have sufficient knowledge about the nature of the hazards, protective measures, military response capabilities, and other available assistance. In responding to the draft report, DOD concurred that without coordination there is little assurance that decisionmaking structures will be in place if accidents occur and that response capabilities can mitigate the effects.

DOD did not concur with the recommendation in the draft report that states and localities be allowed to participate with Army and Navy installations in nuclear weapon accident response exercises. DOD stated that existing instructions require local military installations to cooperate, within the confines of current security classification guidelines,

with state and local officials during radiological emergency exercises, therefore, no additional direction is required. Also, DOD stated that although it is possible to have state and local participation in some nuclear weapon accident response exercises (such as Air Force bases and Navy homeports) without confirming or denying the presence or absence of nuclear weapons, it is clearly not possible to do so at all localities that have nuclear-capable units (e.g., a nuclear weapon storage site). We agree, but again note that state and local officials were not participating in such exercises at the homeports we visited.

We recognize the concern that identifying the small number of Army installations capable of handling and maintaining nuclear weapons may jeopardize security. Also, the Army's initiative to discuss accident plans with properly cleared officials and its effort to allow participation in exercises should enhance preparedness. We, therefore, modified the report to delete our recommendation concerning Army activities.

DOE stated it found the draft report acceptable and agreed with the desirability of coordinating basic emergency planning and preparedness activities, including exercises, with both state and local authorities.

FEMA did not provide written comments on the draft, however, a FEMA official stated that FEMA had no objection to the factual contents.

Request Letter

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COMMITTEE ON RULES
SELECT COMMITTEE ON HUNGER
DELEGATE
NORTH ATLANTIC ASSEMBLY

Congress of the United States
House of Representatives
Washington, DC 20515

April 5, 1985

The Honorable Charles A. Bowsher
Comptroller General of the United States
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bowsher:

The Navy has recently announced a policy to disperse the homeporting of ships at various U.S. port cities. Such a policy implies that many ships, some of which will undoubtedly be carrying nuclear weapons or nuclear materials, will routinely be entering and leaving densely populated U.S. port cities.

We are concerned about the safety implications of such a policy, particularly in the event of an accident involving nuclear weapons or nuclear materials. Such an accident could be disastrous in densely populated areas. As a minimum, we believe well coordinated emergency planning between the Navy and state and local governments is essential.

A study done by GAO in March, 1979, (EMD 78-110), concluded that areas around nuclear facilities should be better protected and better prepared in the event of a nuclear accident. The report appeared to be particularly critical of emergency preparedness around Department of Defense and Department of Energy facilities.

In view of your past work in this area, we are requesting an update of this study, which focuses on the Navy's radiological emergency preparedness plans with affected state and local governments. Among the questions we would like answered are:

- 1) To what extent does the Navy include state and local governments in their emergency preparedness plans?

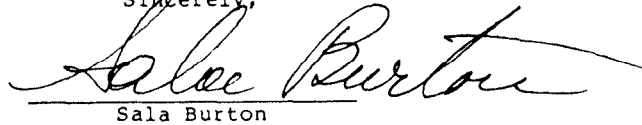
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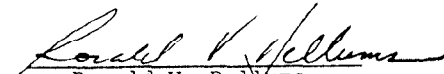
- 2) Are the Navy's policies and plans consistent with other branches of the Defense Department?
- 3) Can state and local governments be more involved in the emergency planning process without jeopardizing national security?

We would appreciate hearing from your staff at the earliest possible convenience. Please contact Michael Moran at 225-4965.

Sincerely,



Sala Burton



Ronald V. DelVums



Don Edwards

Planned Expansion of Homeports for Navy Surface Combatant Ships and Aircraft Carriers

Location	Number and type of combatant ships
Staten Island, New York	1 battleship 1 cruiser 3 destroyers 2 frigates (Naval Reserve)
Corpus Christi, Texas	1 battleship 1 cruiser 1 destroyer
Pascagoula, Mississippi	2 destroyers 2 cruisers
Mobile, Alabama	2 destroyers 2 frigates
Pensacola, Florida	1 aircraft carrier
San Francisco, California	1 battleship 1 cruiser 4 frigates (Naval Reserve)
Pearl Harbor, Hawaii	1 cruiser 3 destroyers
Long Beach, California	4 frigates
Everett, Washington	1 aircraft carrier 2 cruisers 4 destroyers 2 frigates 2 frigates (Naval Reserve)
Galveston, Texas	2 frigates

Prior GAO Reports

Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies (EMD-78-110, Mar 30, 1979)

This report discusses how well prepared nuclear activities and the areas around them are for a radiological emergency. The report concluded that most facilities seemed prepared to respond to nuclear releases within their boundaries, but raised some questions as to whether the public would be adequately protected should a release extend outside the facilities' boundaries. Recommendations were made to the Departments of Defense and Energy, the Nuclear Regulatory Commission, and the Federal Emergency Management Agency to increase preparedness for a nuclear accident.

Further Actions Needed to Improve Emergency Preparedness Around Nuclear Power Plants (GAO/RCED-84-43, Aug 1, 1984)

This report complemented the 1979 report, concentrating on federal, state, and local actions for mitigating the off-site consequences of a nuclear power plant accident. DOD activities were not included in this work. The report concluded that progress had been made in developing a federal plan for responding to all radiological emergencies but the plan did not address all concerns for centralized federal control and coordination. Several recommendations were made to improve preparedness for a nuclear power plant accident.

Observations on Navy Nuclear Weapons Safeguards and Nuclear Weapon Accident Emergency Planning (GAO/NSIAD-85-123, July 29, 1985)

This report discusses the Tomahawk land attack missile nuclear safeguards, nuclear weapon accidents and incidents, radiological hazards, and accident response. Also, it contains limited information on emergency preparedness planning. The report does not contain recommendations.

Evaluation of Nuclear Weapons Transportation Safeguards (GAO/C-RCED-85-1, Nov 1, 1984)

This report is classified and consists of an evaluation of the adequacy of DOD and DOE programs to safeguard the transportation of nuclear weapons and the materials used to manufacture nuclear weapons. This review included air, sea, and ground transportation between DOE and DOD sites.

Operation Crossroads Personnel Radiation Exposure Estimates Should Be Improved (GAO/RCED-86-15, Nov 1985)

This report discusses radiation exposure received by military personnel and civilian scientists who evaluated the damage done to and the radiation intensities on target ships during Operation Crossroads, an atmospheric nuclear weapons test in 1946. It includes a discussion of alpha, beta, and gamma radiation, the effects they have on the body, and protective measures required.

Navy Ships: Information on Benefits and Costs of Establishing New Homeports (GAO/NSIAD-86-146, June 1986)

This report contains information on the Navy's basis for increasing the number of homeports and the scope and cost of developing the new homeports versus costs of homeporting the ships in existing homeports.

Scope and Methodology

Information on the hazards of nuclear weapon accidents was obtained from DOD, DOE, and the independent scientific community. The availability of accident response resources within these two agencies, FEMA, and state and local governments was reviewed, as were emergency plans of the three military services. As part of this effort, we assessed the extent to which the military installations we visited had coordinated emergency planning for nuclear weapon accidents with state and local authorities.

We visited the Washington, D.C., headquarters offices of FEMA, DOE, DOD, Army, Navy, and Air Force. We also visited two FEMA regional offices, several military activities and local government offices in four states, and state government offices in three of the same states. In addition, we visited nuclear-capable ships homeported on the east and west coasts of the United States. (See table IV.1.)

Table IV.1 Number and Type of Activities Visited

	HQs activities	Major commands	Field installations	Total
DOD	3	•	•	3
Navy	1	3	12 ^a	16
Air Force	1	2	4	7
Army	1	1	1	3
DOE	1	•	1 ^b	2
FEMA	1	•	2	3
State government	•	•	•	3
Local government	•	•	•	13
Total				50

^aIncludes two ships

^bLawrence Livermore National Laboratory

Navy ships and field activities chosen for these visits were selected because they had nuclear capability potential, thus they could be used as indices to project how the Navy will involve state and local authorities in emergency planning for the new homeports. Army and Air Force sites having nuclear capability were chosen to provide a comparison for the Navy's emergency planning practices. The various agency headquarters, major commands, and state and local government activities were selected for their principal roles and responsibilities in the nuclear weapons program, including emergency planning for and response to a nuclear weapon accident.

In deference to the national defense policy to neither confirm nor deny the presence of nuclear weapons at any specific DOD location, we have not listed the field sites visited—specific military activities, ships, and local governments—in this report.

At DOD and service headquarters, officials briefed us on their roles, responsibilities, and practices concerning nuclear weapon accidents, emergency planning, and accident response. Also, at these offices we obtained information on applicable policies, practices, procedures, and other guidance concerning the hazards of nuclear weapon accidents and emergency planning for and response to such accidents. Responsible managers at these offices were interviewed concerning these topics and interaction with state and local governments. In addition, DOD headquarters officials provided us accident statistics for the entire Department from 1950 through 1985; naval headquarters gave us information on nuclear-weapon incidents Navy-wide for the years 1965 through 1985.

At the major commands, we obtained the emergency planning and response guidance provided to field units, including information on the hazards resulting from nuclear weapon accidents. We questioned responsible management officials concerning these hazards, emergency planning (especially interaction with state and local governments), and accident response. Other information acquired at these sites included (1) the results of various inspections to ensure the quality of the nuclear weapons program and the ability of units to respond effectively to an accident, (2) records and documents of nuclear weapon accident exercises, and (3) available cooperative agreements between installations and state/local governments regarding such accidents.

From the selected military field installations, we obtained the local guidance for emergency planning, accident response, and interaction with state/local authorities. At those sites and the two Navy ships, we interviewed responsible officials regarding these topics and the hazards of such accidents. Installation and ship plans for radiological emergencies (and for other manmade and natural disasters at some installations) were reviewed also, and we tested their accident response capabilities by selectively inventorying equipment and verifying the availability of personnel to response teams.

At DOE and FEMA activities, officials briefed us on the agencies' roles and responsibilities in preparing for and responding to a nuclear weapon accident. In addition, at DOE we gathered information on safety features of certain nuclear weapons and officials' views of the hazards arising

from such an accident, and reviewed DOE accident response capabilities, including its Atmospheric Release Advisory Capability system. At FEMA activities we obtained their policies and procedures regarding disaster response (including nuclear accidents) and interviewed responsible officials concerning emergency planning, accident response, and interaction with military, state, and local officials

At the state and local government offices, we obtained emergency planning policies and procedures, selectively reviewed plans for natural and man-made disasters, and examined plans prepared for nuclear weapon accidents. Responsible officials were interviewed regarding the hazards of a nuclear weapon accident, emergency planning, accident response, and interaction with military officials. We tested response capability by selectively inventorying equipment, verifying the availability of response personnel, and observing these offices' emergency command centers.

To obtain independent views on nuclear weapon hazards, we consulted scientific reports prepared by the World Health Organization (Geneva, Switzerland) and the Organization for Economic Co-operation and Development (Paris, France) on the health dangers from plutonium. In addition, we discussed such hazards with scientists from the Nuclear Regulatory Commission and the Environmental Protection Agency.

Our analysis of all the information obtained during this review included the following comparisons:

- The views of DOD, the services, DOE, state and local officials, and independent scientists concerning the hazards arising from nuclear weapon accidents.
- Army, Navy, and Air Force policies and practices for emergency planning and related interaction with state and local officials.
- The various types of emergency plans (general disasters, radiological emergencies, hazardous materials, and nuclear weapon accidents) at the military activities and at state and local governments. This comparison assessed the commonality of planning elements and their specific application to nuclear weapon accidents.
- The personnel and equipment of some units with the response requirements.

In addition, we ascertained the actions DOD and the services have taken since 1979 to improve emergency planning for and responsiveness to a nuclear weapon accident

Nuclear Weapon Accident Risks to Public Health and Safety

DOE studies show that extensive safety precautions have made the probability of an inadvertent nuclear weapon detonation virtually non-existent. The United States has never had an accidental nuclear weapon detonation

Given the extremely low probability of an inadvertent nuclear weapon detonation, DOD and DOE regard the most serious hazard of a nuclear weapon accident to be the detonation of a weapon's HE and the break-up and release of plutonium.

Hazards of Nuclear-Weapon High Explosives

The potential hazards associated with the HE used in nuclear weapons are similar to those that can result from accidents involving conventional weapons. If a nuclear weapon were subjected to a sufficiently intense impact, one or more explosions could result that could scatter unstable HE fragments over an area up to about 2,000 feet in radius. If the weapon were subjected to fire, the HE could (1) detonate, (2) melt, flow out of the weapon, and solidify into a volatile substance, or (3) burn, producing toxic gases and residue.

According to DOE and DOD, more recent weapons contain a new, "insensitive" type of HE that is more resistant to accidental detonation. DOD officials stated and DOE documents showed that some older weapon types are being phased out or are being fitted with this new explosive.

Hazards of Nuclear-Weapon Plutonium

Alpha radiation is emitted by plutonium. It is different from beta and gamma radiation created by nuclear reactions. Unlike beta and gamma radiation, which can penetrate the skin, alpha radiation is incapable of penetrating clothing or the outer layer of unbroken skin. Alpha particles are difficult to detect and radiate one or two inches in air, but their effects last for years. Experts in DOD, DOE, and the scientific community¹ agree that alpha particles normally must be inhaled, ingested, or absorbed in the bloodstream through an open wound in order to cause physical harm. These particles are a primary hazard when absorbed this way. Once inside, alpha particles are distributed by the body in a manner similar to that of calcium. They are carried to the bones, liver, kidneys, and other parts of the body and deposited in the bones. These alpha deposits bombard the tissue surrounding them, causing irritation

¹These sources include reports by the World Health Organization, the Nuclear Energy Agency—a subcomponent of the Organisation for Economic Co-operation and Development (Paris, France)—and discussions with a senior health physicist with the Nuclear Regulatory Commission, and a radio biologist with the Environmental Protection Agency

that is not given an opportunity to heal and thus may lead to malignancy.

According to DOD and DOE, people in areas exposed to alpha radiation released by a nuclear weapon accident can minimize their exposure by withdrawing indoors behind closed windows and shutting down air circulation systems. Because it has a very long life and to the extent it causes a health hazard, released plutonium must be recovered.

In most accidents, DOD and DOE expect that the more harmful amounts of radiological contamination will be confined to a relatively small area in close proximity to the accident scene and thus they could potentially endanger a small number of the population. This belief is based in part on the lead-like weight of plutonium, which limits dispersal, and on the extreme force required to break open the warhead. In those cases where plutonium particles are widely dispersed by detonation of a weapon's HE or are transformed to aerosol during a fire, the area of exposure would be greater. However, due to this weight, the amount of plutonium dispersed is expected to lessen as the distance from the accident site increases. According to DOD and DOE studies, the greatest danger to the public from plutonium would be inhalation of aerosolized particles during passage of a cloud created by fire or HE detonation, though the chances of this happening is low.

Plutonium Dispersal

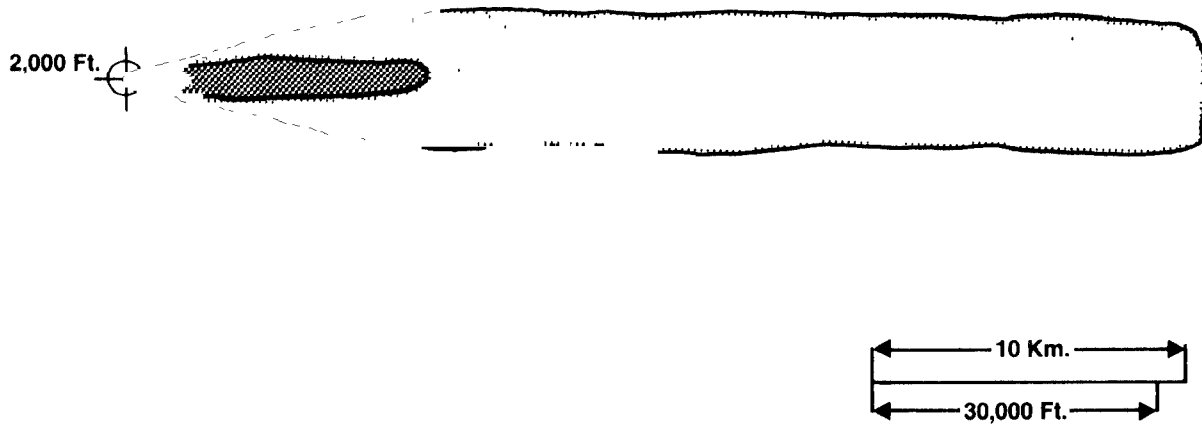
With the aid of DOE's Atmospheric Release Advisory Capability (ARAC) system, plutonium dispersal projections can be provided to response teams within an hour or so after a nuclear weapon accident occurs. The ARAC system is located at Lawrence Livermore National Laboratory, near San Francisco, California, and it consists of a computerized dispersion model, data bases of such information as the topography of geographic areas serviced by the system, and the nature and extent of contaminants associated with each type of weapon. The system has immediate access to current weather data for certain geographic areas through a network of weather towers and automated communication equipment at DOD and DOE facilities. For accident sites outside this network, the system can be used by telephoning the needed data to the laboratory.




Two types of projections are provided by this system. One projection, the dispersal of airborne contaminants (see fig. V.1), is provided to the commander at the accident scene to use, if necessary, as a basis for recommending measures to protect the public. DOD and DOE officials believe the airborne contaminants present the primary health risk. The other

**Appendix V
Nuclear Weapon Accident Risks to Public
Health and Safety**

projection, which shows the dispersal of ground level deposits, is provided to the commander as a basis for determining where to survey for actual contamination measurements. The dispersal pattern for ground level deposits is similar to that for airborne contaminants.

Figure V.1: Airborne Plutonium Dispersal Projection: Multiple Weapons, High Explosives Detonation, Stable Meterological Conditions



Dose Level ^a and Protective Actions		Area (square kilometers)
	Greater than 25 REM ^b (Maximum for this example is 75 REM) Respirator protection required; recommend evacuation	45
	Greater than 5 ^b REM Worker annual whole body dose exceeded; respirator protection required; recommend sheltering; consider evacuation	11.41
	Greater than 0.5 ^b REM General public annual whole body dose exceeded; consider sheltering	134.71

^aThis level represents the dose (whole body equivalent) accumulated over a 30 year period from particles held in the body. This column represents action levels set by DOE. Lung dose is a term denoting the quantity of radiation energy absorbed by the lungs and equates to four times the whole body dose.

^bInternational Commission on Radiological Protection standards expressed in annual whole body dose equivalents.

^cA REM is a unit of measurement that expresses the biological effects of radiation.

Source: Department of Energy.

According to DOE and DOD officials, ARAC projections should not be used as a representation of actual dispersal of plutonium from a nuclear

weapon accident because of inherent limitations. They stated, for example, the projections assume that all available plutonium is aerosolized when a weapon's HE detonates and that 20 percent of it is in respirable size particles (10 microns or less). According to these officials, however, the percentages of plutonium dispersed have been smaller in tests and actual accidents. Also, according to DOE officials, the whole body dose equivalents given in this projection represent expected inhalation (i.e., assuming a person without protection and breathing at a normal rate, remains within the area covered by the plutonium cloud until it passes). Further, the projection in this example (fig. V.I.) covers 7 hours from the time of the accident and assumes the calm meteorological conditions at the time of the accident remain stable for the 7-hour period. These officials state, for example, that increases in wind speed would tend to disperse the material over a wider area, thus lowering concentration levels. Moreover, the statistical confidence level in the model used for the projections is low. For example, according to DOE, in rolling terrain the actual dispersal of material could range from one-half to two times that shown in the above example. Consequently, ARAC projections are useful not as factual dispersal patterns, but as tools for response forces to use when deciding courses of action to protect people and property and determining potential areas of contamination.

What Is the Government's Accident Record?

According to DOD documents, during its several decades of nuclear weapons experience, the United States has had 32 nuclear weapon accidents, none of which involved inadvertent nuclear detonations. As of January 1986, 10 accidents had released radiological material in the immediate vicinities of the accidents and two others had resulted in a broader dispersal from the accident site.

Most of these accidents involved weapons systems no longer in DOD inventory and occurred during Air Force nuclear airborne alert flights. The two most serious radiological releases occurred in Palomares, Spain, in 1966 and in Thule, Greenland, in 1968. The Air Force discontinued these airborne alert flights after the Thule accident, and since that time only one other accident has occurred. That accident took place in 1980 when an Air Force Titan II missile exploded in an Arkansas silo. Though exposed to an explosion, the reentry vehicle containing a nuclear warhead was recovered intact and no radiological material was released.

The Navy has experienced three nuclear weapon accidents; none released radioactive material, resulted in severe weapon damage, or

occurred on ships in port, or endangered civilian population or property. The Army has not experienced a nuclear weapon accident.

There are lesser events that do not qualify as nuclear weapon accidents. Known as nuclear weapon incidents, these less significant mishaps involve nuclear weapons, test training weapons, dummy bomb units, nuclear weapon facilities, components, or associated test and handling equipment. Between January 1965 and December 1985, the Navy reported 630 such incidents, of which 266 involved a nuclear weapon. Of the latter, 66 occurred on Navy ships while in port, but none involved damage to nuclear components. No incident resulted from a ship collision.

What Safety Measures Are in Place for Nuclear Weapons?

According to DOD and DOE, credit for the U.S. nuclear safety record lies with their aggressive application of preventive and safety measures. Because of the political and military importance of nuclear weapons, their destructive power, and the consequences of a serious accident, DOD has tried to ensure that its nuclear weapons are protected from the hazards of their environment. To make its operations as safe as possible, DOD insists upon stringent safety standards, features, and procedures for weapon design and handling. It also administers a continuous program of safety. Safety procedures are reevaluated whenever changes are made and are periodically reviewed as operational experience is gained. In addition, nuclear weapon personnel are chosen and monitored through a strict reliability assurance program. Moreover, DOD units must demonstrate their adherence to safety procedures periodically to obtain and keep their authorization to handle specific nuclear weapons. Should an inspection find any deficiency that would bar authorization, the deficiency may be corrected on the spot.

Summary

According to DOD and DOE, safety precautions in weapon design, handling, storage, and maintenance have caused the likelihood of the worst potential hazard—a nuclear detonation—to be virtually nonexistent. In addition, frequent safety studies and inspections provide added safety assurances. Therefore, officials believe the most probable health and safety hazards from a nuclear weapon accident are the detonation of conventional explosives and the release of plutonium particles that emit alpha radiation, presenting a health hazard if inhaled, ingested, or absorbed into the blood stream through a break in the skin. In the event of an accident, there is some potential for alpha radiation contamination to spread into populated areas, but this is largely dependent on the

amount of aerosolized plutonium, wind direction and speed, and the proximity of the accident site to populated areas

Nuclear Weapon Accident Response Capabilities

The prevention of accidents is paramount in DOD and DOE nuclear weapon programs, and both agencies recognize the continual need to maintain a prompt accident reporting system and effective accident response capabilities. Accident response teams and equipment maintained within DOD and DOE are available to the services and to state and local officials in the event of a nuclear weapon accident. Response resources are also available, to a lesser extent, at most of the state and local governments we visited

Inspections and accident drills are conducted periodically to ensure the adequacy and proficiency of DOD response resources. DOD and DOE conduct national nuclear weapon accident exercises periodically to coordinate responses by federal, state, and local governments.

Accident Reporting

Should a nuclear weapon accident occur, the lowest military command having knowledge of the accident and able to relay information to the National Military Command Center (NMCC) is required to make an accident report. If an accident occurs off base or off ship, local public safety officials or a private citizen may initiate the report by calling a military activity or another authority. Military activities must report immediately by voice, followed with a message. Subsequent reports must be submitted as additional information becomes known.

DOD units provide voice reports to their military command centers, as well as NMCC. Upon receipt of an accident report, these centers mobilize the regional and service response forces. NMCC, which is staffed 24 hours a day, alerts the White House, the Joint Nuclear Accident Coordinating Center, FEMA, and other designated federal agencies. In addition, it assembles its Nuclear Accident/Incident Reporting team (consisting of representatives of these agencies) to coordinate any assistance needed at the accident site.

DOD designates an On-Scene Commander to command the rescue efforts at the accident site. Upon arrival, the commander supervises all federal operations at the scene and coordinates assistance with the senior FEMA official who coordinates with other federal agencies for assistance. The commander's responsibilities include securing any weapons involved in the accident; coordinating with FEMA and federal, state, and local authorities; and assessing public health and safety hazards.

FEMA alerts its regional office having responsibility for the geographical area in which the accident occurs. According to FEMA plans, regional

officials are responsible for notifying state emergency preparedness officials.

Considerable Response Resources Are Maintained Within DOD

Within DOD the resources necessary to respond to a nuclear weapon accident are organized into initial, regional, and service forces. Although the distribution and composition of these forces vary somewhat among the services, these forces are required to include personnel equipped and trained to immediately respond to an accident and to

- secure the accident area;
- evacuate injured persons;
- suppress fires;
- dispose of explosives;
- recover weapons, components, and classified material;
- monitor for radiological hazards;
- decontaminate property and people;
- restore the sites; and
- provide medical, legal, and public affairs services

The initial response force works to stabilize conditions at the accident scene pending arrival of the regional response force, which absorbs the capabilities of the initial force and takes control of response actions at the accident site. Likewise, the service response force, upon its arrival, absorbs the regional response force's capabilities and takes full command of all operations at the site.

Initial Response Forces

Every nuclear-capable unit is required to designate an initial force capable of responding immediately to a nuclear weapon accident. This requirement is met differently by each service, depending on the potential or actual presence of a nuclear weapon. The Navy requires each nuclear-capable ship and shore facility to maintain a force that will provide the first response to an accident. Similarly, the Air Force, recognizing that nuclear-capable aircraft could land at any of its bases, requires every base to have an initial response force whose range of responsibility lies within base grounds. The Army requires units that have custody of nuclear weapons—a relatively small number of locations—to maintain an initial response force. At one location visited, this force may respond to an accident within 15 miles of the base.

Regional Response Force	The Navy and Air Force maintain strategically located regional response forces that will move on short notice to the scene of a nuclear weapon accident. The Navy has positioned regional response forces at six Atlantic Fleet shore installations and at six Pacific Fleet installations. The Air Force has placed regional response forces at 10 bases of the Strategic Air Command. These forces in both services have general geographic areas of responsibility. Officials said that the Army does not maintain regional response forces, as it has so few nuclear weapon sites.
Service Response Forces	Each service has one or more service response force that are manned and equipped to perform accident response tasks and to coordinate all actions at the scene needed to control and recover from an accident. The Navy has two service response forces in its Atlantic Fleet, one serving the northeastern United States and one serving the southeastern United States. The Navy's Pacific Fleet has three service response forces serving the northwestern and southwestern United States and the Pacific area. If conditions at the scene warrant, all or part of the resources available to each of these forces can be marshalled into a single service response force. The Air Force has a service response force located within the SAC, and the Army has a force within its Material Command.
Special Response Capabilities	In addition to the forces just described, the services have special teams and equipment that can be provided to the response forces. For example: <ul style="list-style-type: none">• The Air Force Radiation Assessment Team, consisting of health physicists and technicians and air-transportable equipment located at the Air Force Occupational and Environmental Health Laboratory, can respond to radiological accidents worldwide.• The Radiological Advisory Medical Team, composed of specialists at Walter Reed Army Medical Center, can advise and assist the On-Scene Commander regarding radiological health hazards and radiation exposure levels.• The Radiological Control Team, a special Army group, can perform detailed radiological surveys and advise a response force on the control and disposal of radioactive material.• The Air Transportable Radiac Package, consisting of radiological measuring equipment, spare parts, and technicians maintained in an alert status by the Air Force Logistics Command, can be airlifted to the scene of a nuclear weapon accident.

DOD Response Capabilities Are Tested Periodically

DOD tests its nuclear weapon accident response teams' capabilities by periodic inspections and exercises. Each service conducts technical inspections to ensure that nuclear-capable units can safely and effectively perform their nuclear weapon missions. An inspection includes a test of the response team's ability to respond to a nuclear weapon accident by such means as assessing the adequacy of team training and equipment. During our visits to nuclear-capable units, we also made limited tests by checking the availability of resources and found that designated resources—personnel and equipment—were on hand.

In addition to the inspections, the services periodically conduct exercises to train and test the abilities of response forces to meet actual emergencies. Each service, for example, requires its nuclear-capable units to frequently conduct accident drills. According to internal documents, Army and Air Force units conducted the required drills. Navy officials stated that drills were generally not documented, but that they were conducted as required.

Moreover, DOD has tested response capability through several national exercises in which federal, state, and local officials have participated. The first instance was a field exercise in 1979, as of fiscal year 1985, DOD had conducted four more such tests. Two were field exercises that involved the deployment of resources and some state and local participation and two were command-post exercises. According to DOD officials, exercises of these types are part of an ongoing program scheduled through fiscal year 1990. Some state and local government involvement is expected throughout the program.

DOE Maintains Accident Response Resources

DOE maintains an accident response group to deal with nuclear weapon accidents. This group pools the talents of about 400 scientists, weapons experts, health physicists, and other technical specialists, as well as sophisticated equipment, located at various DOE contractors and laboratories. According to DOE, these resources can be mobilized on short notice to provide scientific advice on radiological hazards and response and to assist with monitoring, decontamination, and disposal. Other resources available to this group include DOE's (1) Nuclear Emergency Search Team, which can conduct airborne radiological surveys and perform radiological analysis and decontamination at an accident site and (2) Radiological Assistance Teams, located throughout the country, which can assist in nuclear weapon accidents.

To help response forces rapidly determine the likely dispersal of radiological contaminants from a nuclear weapon accident, DOE maintains a computerized system known as the Atmospheric Release Advisory Capability system. The system can provide response teams projections of likely dispersals of radiological contaminants in the air and on the ground at an accident site. Appendix V provides further information on this system.

Local and State Response Capabilities

Local and state governments we visited have some ability to respond to a nuclear weapon accident, but expect to rely on military or other federal assistance to determine the hazardous conditions at a nuclear weapon accident site and to clean up afterward. If an accident should occur outside a military installation, localities can respond much as they would to any disaster—that is, with police, fire, and ambulance services.

Generally, local and state emergency offices visited had emergency command centers for use when responding to disasters, including nuclear weapon accidents. Some had equipment that could detect radiation from a nuclear weapon accident, though the equipment had usually been obtained for civil defense programs or for use at power plant accident sites. For example, one local government had equipment that could monitor alpha radiation and that could be used to determine whether ground-level radiation were present in a nuclear weapon accident. Also, one state had alpha-monitoring equipment on a van that can be moved to the site of any nuclear accident.

Summary

Both DOD and DOE recognize the need to maintain the ability to report and respond promptly to a nuclear weapon accident. Current procedures and resources provide for immediate report of an accident to higher authorities and the rapid mobilization of all needed federal response forces.

Response forces with varying levels of capability are required at strategic locations within the Navy, Army, and Air Force. At the locations we visited, we found such forces in place. DOD policies require these forces to be tested frequently. Also, our limited tests at selected sites indicate that designated resources were on hand. Moreover, the services have special teams and equipment that can be dispatched to an accident site as needed.

DOE also has considerable capability to respond worldwide to a nuclear weapon accident. According to DOE, about 400 special personnel can be mobilized on short notice to help respond to an accident. Also, special equipment is available to conduct airborne radiological surveys, radiological analysis and decontamination, and diagnostic work. And, DOE's Atmospheric Release Advisory Capability system can rapidly estimate dispersal patterns for radiological contaminants released during an accident.

States and localities that we visited had limited abilities to respond to a nuclear weapon accident. They expected to rely on the military and other federal agencies should a nuclear weapon accident occur in their areas.

Comments From the Under Secretary of Defense (Research and Engineering)



RESEARCH AND
ENGINEERING

THE UNDER SECRETARY OF DEFENSE

WASHINGTON DC 20301 3010

10 SEP 1986

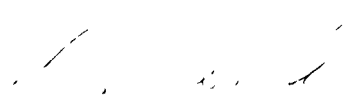
Mr Frank C. Conahan
Director, National Security and
International Affairs Division
US General Accounting Office
Washington, DC 20548

Dear Mr. Conahan

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report entitled "NUCLEAR WEAPONS Emergency Planning For Accidents Can Be Better Coordinated With States And Localities," dated July 7, 1986 (GAO code 394097/OSD case 7059).

With the exception of the recommendation that direction be given to require State and local authority participation in specific installation nuclear weapon accident response exercises, the DoD generally concurs with the draft report. Specific comments which address the report findings and recommendations are enclosed.

Sincerely,



Donald A Hicks

Inclosure

Appendix VII
Comments From the Under Secretary of
Defense (Research and Engineering)

GAO DRAFT REPORT - DATED JULY 7, 1986
(GAO CODE 394097) OSD CASE 7059

"NUCLEAR WEAPONS. EMERGENCY PLANNING FOR ACCIDENTS CAN BE
BETTER COORDINATED WITH STATES AND LOCALITIES"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

o FINDING A: Navy Plans For Homeport Expansions And Additions Create Safety Concerns Over Adequacy of Navy's Planning For Potential Nuclear Weapon Accidents. The GAO observed that, as the fleet expands to 600 ships, the Navy has announced plans to add combatant ships at existing homeports and possibly place others at new homeports. The GAO reported that these combatant ships include vessels with nuclear-weapon capability, a fact that has created some safety concerns over the Navy's plans for homeport expansion. The GAO found that emergency planning for nuclear weapon accidents includes providing for prompt notification of authorities and delineating those actions to be taken immediately to minimize hazards to the public. The GAO concluded that with the expansion of the Navy's fleet into new and existing port areas, planning for potential nuclear weapon accidents has become a vital factor, and planning should be well coordinated among the Navy, the states and local governments beforehand, to ensure that the decisionmaking processes, resources, and response procedures are in place. (p. 2, pp. 10-13, p. 46/GAO Draft Report)

now on pp 2, 10, 11, 28 and 37

DoD Response: Concur.

o FINDING B: Nuclear Weapon Accident Hazards And Present Federal Response Capabilities. The GAO reported that DoD defines a nuclear weapon accident as an unexpected event involving a weapon or nuclear component which will result in (1) detonation, (2) radioactive contamination, (3) high explosives detonation, (4) burning, seizure, theft, or loss of a weapon or components, (5) or other public hazard, actual or implied. The GAO observed that the Navy has never had a shipboard nuclear weapon accident in port or near civilian populations, nor has it had an accident that released radioactivity. The GAO further observed that the Army has never had a nuclear weapon accident. The GAO found that, according to the DoD and the Department of Energy (DoE), safety precautions in weapon design, handling, storage, and maintenance have caused the likelihood of the worst potential hazard--a nuclear detonation--to be virtually non-existent. In addition, the GAO found that frequent safety studies and

Enclosure

inspections provide added safety assurances. The GAO reported that, according to DoD officials, the most probable health and safety hazards from a nuclear weapon accident, therefore, are the detonation of conventional explosives and the release of plutonium particles that emit alpha radiation, presenting a health hazard if inhaled, ingested, or absorbed in the blood stream through a break in the skin. The GAO concluded that, while there is some potential for alpha radiation contamination to spread into populated areas in the event of such an accident, this is largely dependent on the amount of aerosolized plutonium, wind direction and speed, and the proximity of the accident site to populated areas. The GAO further concluded that there is no guarantee despite the prior safety record that nuclear weapon accidents involving radiological contamination will not occur in the future. (p. 2, p.3, pp. 14-20, p. 46/GAO Draft report)

DoD Response: Concur.

o FINDING C: Responsibilities For Planning For and Responding To Nuclear Weapon Accidents. The GAO found that in the event of a nuclear weapon accident, the Federal Government will (1) seek to render the weapon safe from nuclear and conventional detonation, (2) recover all classified material, and (3) ensure that affected areas are restored to normal use. The GAO reported that current procedures and resources provide for the immediate reporting of an accident to higher authorities and the rapid mobilization of all needed Federal response forces. The GAO further reported that response forces are required at strategic locations within the Navy, Army, and Air Force. At the locations it visited, the GAO found such forces in place and equipped. Moreover, the GAO found that the Services have special teams and equipment that can be dispatched to an accident site as needed. In addition, the GAO found that the DoE also has considerable capability to respond worldwide to a nuclear weapon accident, including special equipment to conduct airborne radiological surveys, radiological analysis and decontamination, and diagnostic work. Also, the DoE Atmospheric Release Advisory Capability system can rapidly estimate dispersal patterns for radiological contaminants released during an accident. On the other hand, the GAO found that the states and localities it visited had limited ability to respond to a nuclear weapon accident. According to the GAO, the states and localities expected to rely on the Military and other Federal agencies. The GAO also found that, when possible, and when national security permits, the DoD is required to cooperate with the Federal Emergency Management Agency (FEMA) in developing emergency plans with state and local authorities for DoD-fixed facilities where radiological accidents could occur. According to the GAO, FEMA's primary tasks are to coordinate state and local requests

low on pp 2, 13 17, 37 41 and 49

now on pp 3, 18, 19, 28, 37, 40
and 55, 60

for Federal assistance and to ensure that responses by Federal, state, and local officials are coordinated and mutually supportive. Finally, the GAO found that the authority and responsibility for public safety rest with state and local officials--the governor primarily. To facilitate a prompt and coordinated response, the GAO concluded that emergency planning for this type of disaster should be coordinated among Federal, state and local agencies, as it is for other types of natural and man-made disasters. The GAO further concluded that unless nuclear-capable DoD installations coordinate their planning with state and local governments, there is little assurance that these decisionmaking structures will be in place before an accident occurs and that response capabilities can be applied in an orderly way to mitigate its effects. (p. 3, pp. 20-21, p. 32, p. 46, pp. 68-78/GAO Draft Report)

DoD Response Concur. The DoD is required, when possible and when national security permits, to cooperate with FEMA in developing emergency plans with properly cleared state and local authorities who have the appropriate limited access authorization to coordinate on emergency radiological planning.

o FINDING D: Improvement In Emergency Planning For Nuclear Weapon Accidents. The GAO reported that in 1979, it identified a need for the Military Services to better coordinate their emergency planning with state and local governments. The GAO found that, since 1979, the DoD and the Services have taken a number of actions to improve emergency planning for nuclear weapon accidents. These include (1) updating policies, guidelines, and accident response plans, (2) establishing a national nuclear weapon accident exercises program that has included participation by state and local officials, and (3) developing guidance for DoD components to use when developing emergency preparedness plans with states and localities. (p. 3, pp. 24-31/GAO Draft Report)

now on pp 2 and 20-27

DoD Response Concur.

o FINDING I: Military Services Practices Differ. The GAO found that the Military Services follow different practices regarding the extent to which they involve states and localities in emergency planning. The GAO reported that the Air Force activities coordinate planning with states and localities, while the Army and the Navy practices generally exclude state and local governments. The GAO also found that because the Air Force officials maintain that nuclear-capable aircraft may land at any Air Force base, each base is required to coordinate closely with state and local emergency preparedness offices to develop and exercise nuclear weapon accident plans. In doing so, however, the GAO observed that the Air Force bases neither confirm nor deny the presence or absence of nuclear weapons. With respect to the Navy, the GAO found that emergency plans

for nuclear weapon accidents were in place for seven of the 10 Navy installations it visited, and draft plans covering the other three had been prepared. The GAO concluded, however, that as a matter of security, the Navy installations had not coordinated or exercised these plans with state and local officials. The GAO reported that the Navy holds that the prohibition against either confirming or denying the presence of nuclear weapons at a specific location precludes, in practice, any open communication or planning with state and local governments. The GAO further reported that, according to Navy officials, entering a mutual support agreement with state and local officials concerning nuclear weapon accidents would confirm the existence of nuclear weapons at a specific location. The GAO also found that, as a rule, Navy installations do not exercise emergency plans for nuclear weapon accidents with state and local governments. The GAO found that Army practices were similar to those at the Navy. The Army guidance requires officials of nuclear-capable installations to coordinate emergency response procedures with local communities that might be affected by an accident or be called upon to assist, but such coordination is limited to carefully selected local authorities and only in terms of the installations' conventional ammunition mission. (p. 4, pp. 32-49, p. 46/GAO Draft Report)

now on pp 2 and 28-40

DoD Response: Partially concur. The report implies that the Air Force interfaces directly with all state and local governments concerning emergency preparedness for nuclear weapon accidents. This is not the case. It is correct, however, that the Army and the Navy generally have less participation with state and local authorities than the Air Force. This is because the Army and Navy always exclude coordination of nuclear emergency planning with uncleared officials. The Air Force, by maintaining that nuclear-capable aircraft may land at any Air Force base, are able to coordinate with uncleared authorities without confirming or denying the actual presence of nuclear weapons.

o FINDING F: State and Local Emergency Preparedness Officials Desire and Needed More Information. The GAO reported that state and local disaster preparedness officials with whom it visited believed that should a nuclear weapon accident occur on a Navy or Army base, they would need accurate, timely information on the likely hazards to their communities. The GAO also observed that some state and local officials believe military installations and other federal agencies will respond to a nuclear weapon accident and hence emergency planning for such accidents have a relatively low priority, whereas other state and local officials believe that unclassified information and dialogue on the following topics are essential to understand and develop mutually supportive emergency plans:

- availability of military support for local assistance after an accident;
- plans and capabilities for treatment of radiation effects; and
- technical data on potential hazards and applicable protective measures.

Finally, the GAO reported that local officials believe it would aid their understanding to at least observe, if not participate in, local unclassified Navy and Army emergency response exercises regarding nuclear weapon accidents. The GAO observed that a national exercise in 1983 (NUWAX 83), which incorporated state and local participation with the Navy in responding to a simulated major nuclear weapon accident, affirmed the necessity for emergency planning and coordination between military officials and civil authorities. The GAO noted that one conclusion from the 1983 exercise was that a prompt, effective, coordinated reaction would depend on the degree of planning and mutual knowledge of responsibilities and capabilities established prior to an accident. The GAO reported that another 1983 exercise conclusion was that military installation commanders should plan to coordinate or interface with state and local officials during radiological accident exercises within the limits permitted by security classification guidelines and the ability of the local governmental agencies to participate. The GAO concluded that coordinated planning was necessary because of (1) the complexities of the response required, (2) the initial confusion resulting from inadequate information flow, (3) the hazards to life, and (4) the threat of radioactive contamination. The GAO further concluded that to enhance nuclear weapon accident coordination, military installation commanders must be provided clear guidance and assistance to enable them to plan effectively with their civilian counterparts (p.4, pp. 32-33, pp 39-42, p.46/GAO Draft Report)

now on pp 3 and 28-40

DoD Response Concur.

o FINDING G: Coordination Achievable Without Violating DoD Security Policy. The GAO reported that officials at Navy and Army installations cited DoD policy to neither confirm nor deny the presence or absence of nuclear weapons as the major reason for not involving state and local authorities in emergency planning for accidents involving nuclear weapons. The GAO found, however, that disclosure that a specific ship or an installation is nuclear-capable is not considered classified information by the DoF and the DoD. The GAO further found that, according to a Navy document, the "neither confirm nor deny" policy applies to the physical presence of tactical nuclear weapons, not to the ability of any unit to deliver,

handle, or maintain nuclear weapons. The GAO also found that (1) information regarding the actual presence or absence of tactical nuclear weapons is classified, (2) joint DoD and DoE classification guidance states that the capability to store or handle nuclear weapons at any U.S. military installation and the identification and location of specific nuclear-capable units are unclassified, when the actual presence of nuclear weapons is not revealed, and (3) identification of any installation as an actual nuclear weapon storage site, however, reveals the presence of nuclear weapons and is classified. The GAO reported that despite the cited DoD and DoE classification guidance, Navy officials claimed the fact that a naval weapon station is nuclear-capable is classified, even if the actual presence of nuclear weapons is not revealed. Also, Army officials stated that due to the small number of Army installations currently capable of handling and storing nuclear weapons, all Army installations would need to be considered nuclear-capable in order not to reveal the actual presence of weapons at any one installation. The GAO concluded that the Navy and Army position on nuclear-capable units is more restrictive than the DoD and DoE joint classification guidance allows. The GAO asserted that Military installations, including Navy homeports for nuclear-capable ships, would not violate policy by acknowledging that they are nuclear-capable and, without revealing the presence of nuclear weapons or the types involved, could provide states and localities unclassified emergency planning information and the opportunity to exercise plans periodically. The GAO noted that interim DoD guidelines for coordinating radiological emergency planning with state and local authorities represents a positive step toward achieving this coordination. The GAO observed, however, that while this guidance provides for some degree of coordination with state authorities, it still falls short of doing so with local authorities. The GAO concluded that both state and local authorities have responsibilities to protect the population should an accident occur outside a military installation, or should the hazards from an accident on a military installation spread into the local community, therefore, emergency planning also should be coordinated with local authorities. The GAO also observed that DoD guidance does not specifically provide for exercises involving state and local governments. The GAO concluded that these exercises are essential for ensuring effective response in the event of a nuclear accident (p.5, p 33, pp 42-47/GAO Draft Report)

now on pp 3, 4, 28 and 35-40

DoD Response Partially concur. The report concluded that the Navy and Army position on nuclear-capable units is more restrictive than the DoD and DoE joint classification guidance allows. The Joint DoI/DoD Nuclear Weapon Classification Guide (CG-W-5), to which the GAO refers, states that "The capability to store or maintain weapons at a specific location or installation normally is not classified, but information

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7

revealing the actual presence of weapons is classified, as is the identification of a specific location as a nuclear weapon storage site" Specifically, in accordance with CG-W-5, the identification that any specific installation (weapons station, base, fort, etc.) within the United States or its territories is a nuclear weapons storage site is classified at the Confidential, Formerly Restricted Data level regardless of whether or not the actual presence of nuclear weapons is revealed. Therefore although it is possible to conduct nuclear weapon emergency preparedness planning with unclassified officials at locations where a nuclear-capable unit might visit (USAF base, USN homeport) it is not possible to conduct similar planning at an unclassified level at a "weapon storage site." In the latter case, the Army and the Navy have made the proper interpretation of the classification guidance by ensuring that only properly cleared officials from state and local governments participate in the nuclear weapon emergency preparedness planning. In addition, it should be noted that contrary to the GAO finding, DoD Instruction 5100.52 requires that local military installations shall cooperate, within the confines of current security classification guidelines, with state and local officials during radiological emergency exercises.

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RFCOMMENDATIONS

o RECOMMENDATION 1. The GAO recommended that the Secretary of Defense direct the Army and Navy Secretaries to ensure that their nuclear-capable installations, including Navy homeports, provide the opportunity for state and local authorities to coordinate emergency plans for nuclear weapon accidents by sharing unclassified planning information regarding such things as (1) the potential hazards associated with such accidents, (2) accident notification policies and procedures, (3) DoD response capabilities, and (4) procedures for requesting assistance. (p. 47/GAO Draft Report)

now on p'38

DoD Response Partially concur The 'interim DoD guidance' expected to be published by December 1986, will exceed the intent of that portion of this recommendation that applies to state authorities, in that it authorizes all DoD components to interface with senior state officials who have the appropriate limited access authorization to coordinate on all (classified and unclassified) emergency radiological planning. Special radiological preparedness by local authorities is not considered necessary in that the timing and release characteristics of postulated accidents are such that existing nonnuclear local government general purpose emergency response plans (civil disturbances, natural disasters, major fires, chemical releases, etc) provide an adequate interface to support effective response to a nuclear weapon accident. It

Appendix VII
Comments From the Under Secretary of
Defense (Research and Engineering)

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should be noted that the 'interim DoD guidance' does not, however, preclude the DoD components from appropriate interface with local authorities at the 'unclassified' level.

o RECOMMENDATION 2: The GAO recommended that the Secretary of Defense direct the Army and Navy Secretaries to ensure that their nuclear-capable installations, including Navy homeports, provide the opportunity for state and local authorities to coordinate emergency plans for nuclear weapon accidents by providing for state and local participation in installation response exercises. (p. 47/GAO Draft Report)

now on p 38

DoD Response: Nonconcur. DoD Instruction 5100.52 currently requires, for all services, that local military installations shall cooperate, within the confines of current security classification guidelines, with state and local officials during radiological emergency exercises. Therefore, no additional direction is required. It must be recognized that, although it is possible to have state and local participation in some nuclear weapon accident response exercises (such as USAF bases and USN homeport sites) without confirming or denying the presence of nuclear weapons, it is clearly not possible to have similar participation at all localities that have a nuclear-capable unit (e.g., a nuclear weapon storage site) without confirming the presence of nuclear weapons. State and local participation has in the past, and will continue in the future, to be an important facet of the DoD National Nuclear Weapon Accident Exercise Program.

Comments From the Assistant Secretary of Energy (Management and Administration)



Department of Energy
Washington, DC 20585

August 5, 1986

Mr. J. Dexter Peach
Director, Resources, Community, and
Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach.

The Department of Energy (DOE) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report entitled "Nuclear Weapons. Emergency Planning for Accidents Can Be Better Coordinated with States and Localities."

The Department of Energy finds the technical content of the subject draft GAO report acceptable for publication. We agree with the desirability of close coordination with both state and local emergency response authorities in basic emergency planning and preparedness activities, including exercises. To support this goal and to provide state and local response authorities with a better understanding of the particular radiological, safety, security, and management aspects of an accident involving nuclear weapons, the Department is now working with the Department of Defense and the Federal Emergency Management Agency (FEMA) to develop a training course for state and local authorities on this subject. Our goal is to present a trial course in early 1987. Once established, FEMA has proposed that this course be offered twice a year.

The Department wishes to point out that the fundamental aspects and capabilities necessary for effective emergency response are, in general, independent of the nature of the emergency or of its specific consequences. The quantity of specific response resources necessary to respond to an emergency may change with both the type of event and the time within the event. The need for the fundamental capabilities such as effective data gathering and analysis, timely communications, notifications, logistical support, and management and control systems remains constant.

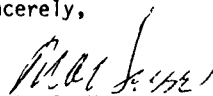
For this reason, the development and maintenance of fully integrated basic emergency response capabilities are, in most cases, more appropriate than the development of a multitude of individual, accident type specific plans. In fact, emergency planning and preparedness are dynamic processes which must be responsive continuously to the changing nature of the hazards and the resources and technology available to support effective responses.

Appendix VIII
Comments From the Assistant Secretary of
Energy (Management and Administration)

Per your request, the Department performed a classification review of your draft report and determined that it contains no Restricted Data, Formerly Restricted Data, or other information classified under the Department of Energy rules and regulations. However, since the report is concerned predominantly with Department of Defense (DOD) installations and procedures, we defer to the DOD for determination of its correct classification.

DOE hopes that these comments will be helpful to GAO in their preparation of the final report.

Sincerely,


Martha O. Hesse
Assistant Secretary
Management and Administration

Glossary

Alpha Particle	A charged particle emitted spontaneously from the nuclei of some radioactive elements and identical with a helium nucleus. Alpha radiation is difficult to detect and its effect lasts for years. It has a range of only a few inches in the air and is incapable of penetrating clothing or even the outer layer of unbroken skin. However, alpha radiation is a primary hazard when absorbed internally.
Beta Particle	A charged particle of very small mass emitted spontaneously from the nuclei of certain radioactive elements. Beta radiation may travel several feet in the air before being absorbed. In more dense material, such as body tissue, beta radiation may travel up to half an inch. Clothing normally provides adequate protection from beta radiation. Therefore, beta radiation is a hazard only when beta-emitting materials are either in direct contact with the skin or absorbed internally.
Emergency Planning	Preparing in advance to implement those actions and procedures necessary to facilitate a rapid, successful response.
Gamma Ray	Electromagnetic radiation originating in the nuclei of certain radioactive elements and accompanying many nuclear reactions. Gamma rays can travel great distances through the air and can penetrate a considerable thickness of material.
Lung Dose	A term denoting the quantity of radiation energy absorbed by the lungs.
Plutonium	An artificially produced fissile material, isotopes of which are used in nuclear weapons. Plutonium emits alpha radiation.
Rem	A unit that expresses biological effects. Exposure to one roentgen of gamma radiation is approximately equivalent to one rem.

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