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Investigation of nuclear powerplants security and the Nuclear Regulatory Commission's (NRC) inspection and regulation of the security showed the systems to be inadequate. New regulations set up by NRC are an improvement, but further action needs to be taken, especially in regard to the hiring and training of guards. Commercial nuclear fuel facilities also need tighter security systems, although NRC has more stringent guidelines set up for the commercial plants than for the noncommercial ones. The primary concern at commercial plants is the control of dangerous special nuclear material, which are potential targets of terrorist groups. Since accounting for special nuclear materials is extremely complex, some discrepancy between physical and book inventories is expected. The discrepancies which cannot be reconciled are termed "material unaccounted for" (MUF). Since licensed facilities began operating in 1955, the MUF at major commercial facilities has amounted to thousands of kilograms of special nuclear materials. The physical security systems are increasingly critical because of the imprecisions of accounting for the special nuclear materials, but GAO found serious weaknesses in the systems. The weaknesses included improperly tested security alarms, unclear requirements of the placement of armed guards, poor personnel search and access control practices, and lack of emergency lighting in certain key security areas. (Author/SS)

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Copies of this statement and the unclassified digest of our report entitled "Commercial Nuclear Fuel Facilities Need Better Security" (CLASSIFIED CONFIDENTIAL/RESTRICTED DATA) are embargoed until release, expected at approximately 11:00 a.m. Monday, May 2, 1977

United States General Accounting Office
Washington, D.C. 20548

Statement of
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before the
Subcommittee on Energy and Power
House Committee on Interstate and Foreign Commerce
on
Nuclear Regulatory Commission Security Programs

Mr. Chairman, the General Accounting Office considers the area of nuclear safety and safeguards to be of paramount importance and, accordingly, we have had a continued involvement in reviewing Federal efforts to protect the American public from the potential hazards of nuclear power. We are here today at your request to discuss two of our recent reports--one entitled "Security at Nuclear Powerplants--At Best Inadequate" (EMD-77-32) and the other entitled "Commercial Nuclear Fuel Facilities Need Better Security" (CLASSIFIED CONFIDENTIAL/RESTRICTED DATA) (EMD-77-40).

In addition, Mr. Chairman, you asked our views on H.R. 2788 and S. 266 and on the plans for NRC to shift from using Government-owned computers to privately owned computers. We are currently reviewing these more detailed matters and will provide our analysis to you shortly. We would hope you could

keep the record open for 10 days to allow us to provide this analysis.

I would now like to proceed to discuss, first, our nuclear powerplant security report and, second, our commercial fuel facility security report which includes significant policy recommendations for a major restructuring of Federal nuclear safeguard responsibilities.

SECURITY AT NUCLEAR POWERPLANTS

Successful sabotage of a nuclear powerplant could result in significant losses of life and property. Our report on nuclear powerplant security focuses on the vulnerability of the commercially owned nuclear powerplants in this country to sabotage, and the effectiveness of NRC to protect against it. Our overall conclusion is that NRC has not operated decisively or effectively in the security area and, as a result, security systems at most, perhaps all, powerplants would not be able to withstand sabotage attempts now considered minimum by NRC.

In making our review we accompanied NRC inspectors as they appraised the security systems at six nuclear powerplant sites. During these visits, we found that deficiencies in security systems were in two major categories; namely, the degree of physical protection varied among the plants, and guard forces had major shortcomings.

The differences in powerplant security systems are illustrated by the fact that one plant was protected by

--magnetic alarms on the gates;

--an infrared alarm system along the perimeter of the plant;

--a closed circuit television system which can cover the complete perimeter;

--a computerized key-card system for monitoring all of the important doors in the plant; and

--an attack resistant guard house with bullet resistant glass, steel plated ceilings, and dual electrical systems.

Another plant had none of these items but relied on an 8 foot fence topped with barbed wire.

These differences resulted from NRC's failure, until recently, to define minimum threat levels upon which utilities could build their security systems. In the absence of such a definition, the utilities were given the latitude to, in essence, set the requirements that they would abide by in protecting their plants. As you would expect, some utilities imposed more stringent requirements on themselves than did others.

The second major deficiency we noted during our visits concerned weaknesses in guard forces. For example, the amount of training necessary before a recruit could begin working at a powerplant ranged from 120 hours for two guard forces to 4 hours training for one guard force. However,

prior to this training, all guard forces were required to have both firearms and general training.

Perhaps the most distrubing information we obtained concerned the annual turnover rate of guards. Three powerplant sites were protected by guard forces that have experienced annual turnover rates of 35 to 48 percent. The information that most of these guards possess about the powerplant and its security system could be valuable to a potential saboteur.

NRC is well aware of the problems concerning guard forces. Our report discusses four studies, done for NRC by contractors, which point out major guard force weaknesses and shortcomings similar to those I just described.

Several studies done for NRC, as well as a special inspection NRC made in 1976, support our views on the inadequacies of security systems. Let me elaborate further on the special NRC inspections. In February 1976, NRC began a special inspection program which assessed all operating plants against a threat level of several outsiders and one insider. This was initiated because of an NRC internal memorandum which set forth a minimum threat level and indicated that if plants could not protect against this level then the security must be presumed inadequate.

NRC inspected all operating powerplants using this minimum threat as criteria and found weaknesses at all 43 sites. NRC told us that perhaps none of the sites could meet this minimum threat level.

The regulations recently issued by NRC offer an opportunity to remedy many of the shortcomings that now exist. To give these regulations a better chance of succeeding, we believe that NRC personnel should perform on-site evaluations of security systems--prior to approval. This is not now being done. Also, we believe that NRC must develop, as quickly as possible, methods for making major improvements in guard force management in such areas as turnover rates, use of firearms, and background investigations and must direct the utilities to immediately make such improvements. Unfortunately, the new regulations do not specify any such upgrading actions.

Third, NRC inspectors should be authorized and encouraged to go beyond the utilities' plans when looking at security systems and appraise the systems in terms of whether their actual performance can meet the minimum threat. This would make the NRC inspection program more aggressive and encourage a self-checking mechanism.

In the report we set forth recommendations to the Chairman of the NRC which we believe will provide further improvements in powerplant security. One recommendation calls for immediate action to increase interim protection at powerplants. NRC has taken exception to this recommendation because it believes the new security regulations will provide the necessary protection. However, since the recently enacted regulation permits the utilities up to 1-1/2 years to comply with several significant provisions involving construction or installation

of equipment, we still believe that interim measures are necessary. Such measures should include (1) promptly alerting plant management of the serious deficiencies in security systems at existing powerplants, (2) specifying interim actions that plant management can take to strengthen security, (3) improving coordination with local law enforcement authorities, and (4) increasing the number of guards.

We will continue to monitor NRC's security program for commercial powerplants until we are convinced that NRC has vigorously pursued this critical responsibility in protecting the public.

SECURITY AT COMMERCIAL FUEL FACILITIES

The development and expanded use of nuclear energy in the United States has resulted in increasingly large amounts of highly dangerous "special nuclear material" being processed by the Government and private industry. The most dangerous are plutonium and highly enriched uranium. In addition to being used to fabricate bombs, plutonium is an extremely toxic substance. Such materials, therefore, are potential targets of terrorist groups. The potentially catastrophic consequences of even a single theft of significant quantities of such material makes it essential that these materials be carefully protected.

Two Federal agencies are responsible for properly safeguarding nuclear materials. In general, ERDA is responsible for nuclear materials held by its facilities and NRC is

responsible for enforcing safeguard requirements at commercial facilities it licenses.

The basic systems used at NRC licensed facilities are (1) material control and accountability for detecting and deterring thefts and (2) physical security to prevent or respond to thefts.

Accounting for special nuclear material

Accounting for special nuclear materials is extremely complex. Current state-of-the-art limitations in measurement instruments and the difficulties in measuring nuclear materials held in pipes, machinery, and filters preclude accurate measurements. The former Atomic Energy Commission and its successor agencies have recognized the imprecisions and limitations of the accountability systems. Since 1968, ERDA has had a program aimed at improving the instruments used to measure and record nuclear materials.

In normal operations discrepancies do occur between physical and book inventories. Discrepancies which cannot be reconciled are termed "material unaccounted for" (MUF).

Since licensed facilities began operating in 1955, the MUF at major commercial facilities has amounted to thousands of kilograms of special nuclear materials. Although these quantities do not necessarily denote lost of stolen material, the fact that it is unaccounted for greatly detracts from the integrity of the safeguards system.

Because of the imprecisions and other limitations associated with the accountability and material control systems for nuclear material, the physical security systems are increasingly critical to the integrity of the system.

PROTECTING SPECIAL NUCLEAR MATERIAL

We found that weaknesses existed in the physical security program used to protect special nuclear material in the areas of

--physical security systems in place at the licensee facilities we visited;

--threat level being protected against;

--the guard's authority to use firearms; and

--security clearances of licensee employees.

Physical security system weaknesses

Physical security controls and procedures that NRC requires licensees to adopt, include (1) armed guards, (2) alarmed fences and vaults, (3) electronic detection devices, (4) liaison with local law enforcement authorities, and (5) access and exit controls.

There were shortcomings in the physical security systems at the three licensee sites we visited. These weaknesses include

--security alarms that were improperly tested;

--unclear requirements as to where armed guards should be placed;

--poor personnel search and access control practices; and

--a lack of emergency lighting in certain key security areas.

Threat level increased

Unlike nuclear powerplants, NRC has had an established minimum threat level that security systems at commercial fuel fabrications should be designed to protect against. Recent NRC studies suggest that the probable threat has increased and that security systems at commercial fuel processing facilities should be increased to be able to respond to that increased threat. We can not discuss the details of the actual threat levels. They have been classified by NRC.

We strongly recommend that NRC require security systems be upgraded to protect against higher threat levels than they are now capable of protecting against.

Guard's authority limited

NRC has not clearly defined the authority of private guards to use firearms to protect special nuclear material, because individual State laws restrict the use of such weapons by private guard forces. Most State laws allow the use of deadly force only in cases involving an imminent threat to life. In other words, the rights of guards to use weapons on duty are not greater than those of private citizens.

NRC regulations require that guards responding to a possible special nuclear material threat determine if a threat really exists, assess its extent, and act to neutralize the threat, either by themselves or by calling for assistance from

the local law enforcement authorities. The regulations, however, do not state when a guard can legally use a firearm to protect special nuclear material. Circumstances may be encountered where the use of firearms is necessary to protect against the theft of the material; but because personal danger is not evident, guards may not be explicity authorized to use firearms.

ERDA rules governing the use of firearms contrast sharply with the NRC regulations. ERDA guards are authorized to discharge their firearms if needed, to prevent special nuclear material from being stolen.

We recommend that NRC seek Federal and/or State legislation authority, as appropriate, to allow guards at licensed facilities to use firearms to prevent the theft of special nuclear material.

Security clearances needed

A good security system demands reliable and trustworthy employees. ERDA requires personnel background investigations and security clearances of its employees and those of its contractors. NRC, however, does not require employees of commercial fuel processers to undergo security clearances even though many have access to special nuclear material or have safeguard responsibilities. At one licensee site we visited, a guard with a criminal record under another name, including a 20-year sentence for bank robbery had been employed. While employed at the facility, the guard was

arrested for alleged involvement in a bank robbery and shooting incident.

We recommend that NRC require a security clearance program for licensees processing significant quantities of special nuclear material. Recently NRC has published a proposal for public comment to accomplish this.

NEED TO CONSIDER RESTRUCTURING FEDERAL SAFEGUARDS RESPONSIBILITIES

The appropriateness of a single Government agency responsible for promoting and regulating the use of nuclear power had been questioned for almost two decades. The Energy Reorganization Act of 1974 realigned these responsibilities by separating the Atomic Energy Commission into ERDA and NRC, the first to promote nuclear development and the second to regulate the commercial industry.

From our perspective the act has been only partially successful in assuring the seperation of the promotional aspects of nuclear development from its regulatory aspects. In particular, it did not give NRC responsibility to regulate ERDA's nuclear facilities. As a result, ERDA is responsible for building an adequate level of safeguards into its own programs and operations.

To minimize the risk to the public of subordinating regulatory to promotional functions, to maximize objectivity and impartiality, and to increase public confidence in the

safe operation of nuclear facilities, we believe it is necessary for an independent determination to be made that both Federal and commercial nuclear facilities are being operated in the best interest of the security, health, and safety of the Nation.

In part, at least, the issue boils down to one of credibility. Regardless of how well ERDA may both perform the operations and inspect them themselves, the public cannot be assured of an independent, objective assessment of health, safety, safeguards, and security aspects of the program.

In our view, there are three alternative methods to accomplish this objective.

One alternative is to give NRC the authority and responsibility for establishing policies, standards, and requirements in cooperation with ERDA for carrying out these assessments.

The second alternative is to retain this responsibility and authority within ERDA. Should this alternative be chosen, we believe clear statutory provisions should be enacted to properly insulate these oversight activities from the developmental aspects of ERDA's activities. 1/

The third alternative is to authorize NRC to periodically audit and assess ERDA's nuclear programs and facilities,

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1/We are attaching a list of the types of provisions that we believe could effectively insulate these oversight activities.

including its weapons development activities. This alternative should provide for NRC to annually report the results of its audits and assessments, as well as its plans for future assessments, to both ERDA and the Congress. We envision that assessments of ERDA's weapons development programs would cover special nuclear material from the point it is first produced and continue through the weapons fabrication program until the completed weapon is turned over to the military.

Under any alternative, both agencies must work together to assure that the best available procedures, techniques, and criteria are used to safeguard special nuclear material.

NRC did not disagree with the concept that it be given oversight responsibility for ERDA's nuclear facilities. NRC did, however, point out several complex issues that would have to be resolved before this alternative could be implemented.

ERDA believes the concept of independent assessment has considerable merit from the standpoint of assuring the Administrator and the public as to the adequacy of its nuclear operations. However, it does not believe that placing this responsibility within NRC is a viable alternative because they argue that "it would impose extraordinary burdens on both organizations without commensurate benefits." ERDA believes that any NRC oversight role would be tantamount to requiring its facilities to be licensed. Further, ERDA contends that NRC would have to acquire expertise it does not now have and which would, to a large extent, duplicate ERDA's.

In the light of our concerns, ERDA has undertaken a review to determine how to best structure an organization for independent assessments. Nevertheless, we doubt that ERDA can structure such an organization which would provide the kind of independent, objective, and credible assessments we are discussing without asking the Congress to enact amending legislation.

Nuclear development will continue to play an important role in any national energy policy. Because the future of nuclear energy depends heavily on the credibility of Federal regulation of this energy source, we hope our recommendations will provide the impetus for dialogue on the nature and extent of NRC's and ERDA's roles. We believe that the need for independently assuring the public and the Congress that all nuclear facilities are protected from the potential hazards of nuclear operations is absolutely essential. However, such a dialogue is important and there are additional pros and cons to be weighed in the arguments over how best to achieve the objectives we recommend. Nevertheless, we should not wait too long, dialogue is no substitute for timely action, to implement one of the alternatives we suggest.

In view of the Administration's proposed energy reorganization, this is especially propitious time to consider restructuring Federal nuclear oversight responsibilities. We will be available to discuss in detail, as necessary, our

recommendations on this subject as they relate to health and safety considerations.

Mr. Chairman, that concludes my prepared statement. We will be glad to answer any questions you may have at this time.

ACTIONS THAT WOULD BE INFERRED TO INSULATE ERDA OVERSIGHT ACTIVITIES FROM DEVELOPMENTAL FUNCTIONS

--Give the head of the oversight activities (who would be appointed by the President and confirmed by the Senate) a specified term of office. The term of office should exceed that of the Administrator of the Energy Research and Development Administration.

--Require that the head of the oversight activities report directly to the Administrator of the Energy Research and Development Administration.

--Stipulate by specific legislative provisions the responsibilities of the oversight organization emphasizing its independence from energy policy formulation and development. In this regard, provide through legislative history the sense of the Congress that the head of the oversight activities be able to speak independently on matters relative to the oversight activities, including testimony before the Congress.

--Provide for close congressional monitoring of the oversight organization's activities.

--Vest the oversight responsibilities directly in the head of the oversight organization.

--Require that any request for Energy Research and Development Administration appropriations identify the portion of the request intended for the support of the oversight activities and a statement of the differences, if any, between the amounts requested and the head of the oversight activities assessment of the budgetary needs of the organization.

--Provide that neither the head of the oversight activities nor the deputy head could be removed from office for purposes other than being permanently incapacitated, guilty of neglect of duty, malfeasance in office, guilty of a felony, or conduct of moral turpitude.

--Establish the oversight activity as a professional organization by requiring its head to be a person who, by reason of professional background and experience, is specially qualified to handle a nuclear oversight activity and be chosen on a merit basis.