UNITED STATES

June 13, 1975 NUCLEAR REGULATORY COMMISSION SECY-75- 276

POLICY SESSION ITEM

For: The Commissioners

Thru: Executive Director for Operations

Subject: REVIEW OF ERDA's "ANNUAL REPORT TO THE NATIONAL SECURITY COUNCIL ON THE STATUS OF DOMESTIC SAFEGUARDS"

Purpose: To inform the Commission of the staff's appraisal of the subject draft report.

Background: The Chairman of the National Security Council, on April 24, 1974, sent National Security Decision Memorandum 254 to the Chairman of the Atomic Energy Commission requesting that the AEC "submit an annual report on the effectiveness of the safeguards system, program developments and related recommendations for his (the President's) consideration." The first annual report was forwarded on August 7, 1974.

The National Security Council, in a memorandum dated April 29, 1975 (Attachment 1), informed the NRC Chairman that ERDA, working with other Executive Branch Agencies, had undertaken the preparation of the annual safeguards report. The memorandum indicated that the President "would welcome the contributions of your staff and the comments of your Commission in developing this annual report on domestic safeguards and would hope that your organization would be prepared to participate." The NRC Division of Safeguards transmitted to ERDA, on March 5, 1974, for their use in preparing the annual safeguards report, a description of the significant events in the safeguards program for licensed special nuclear material and related facilities for the year 1974.

ERDA, on May 20, 1975, forwarded to NRC the subject draft report (Attachment 2) and requested our critique.

Discussion: The staff reviewed ERDA's draft report on safeguards and on June 4, 1975, formally responded to ERDA (Attachment 3). The staff presented three major recommendations to ERDA as summarized below:

- State in the report transmittal letter that the report was coordinated with NRC instead of prepared with NRC assistance. The purpose of this change was to delete inference that all NRC views had been incorporated.

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- Strong disagreement was expressed with the suggestion that "... the National Security Council seek Congressional support for directing the NRC to accept the major features of ERDA-developed safeguards and security measures and principles for new reactor concepts and related fuel cycles." We pointed out that this proposal is definitely contrary to the intent of the Congress that the NRC function as an independent regulatory agency. As an independent agency, the NRC provides a much needed "check and balance" function which can definitely strengthen our Nation's safeguards system by developing regulations independent of the research and development phases. Accordingly, we requested that the report clearly state that (1) the suggestion expressed only an ERDA view and (2) the NRC does not agree with that view.

- Include in the annual report, as an attachment, NRC's submission to ERDA (Enclosure to Attachment 3) describing significant events during the past year in the safeguards program for licensed special nuclear material.

ERDA was also requested to return the final version of the report to NRC for review. All of our comments were basically accepted by ERDA in an interagency coordination meeting held June 4, 1975. Mr. H. E. Lyon, Director of ERDA's Division of Safeguards and Security, indicated that the report would be appropriately revised and sent to NRC for concurrence during the week beginning June 9, 1975. Commission will be briefed before concurrence is given.

Kenneth R. Chapman, Director
Office of Nuclear Material Safety
and Safeguards

Enclosures:
Attachment 1 - NSC Memo dtd 4/29/75
Attachment 2 - ERDA Memo dtd 5/20/75
Prop. Ltr. Seamans/Kissinger
Annual Rpt. on Domestic Safeguards,
w/encls. (Exhibits 1 and 2),
Conf./NSI
Attachment 3 - NRC Ltr. to ERDA dtd 6/4/75 w/encls.

Commissioners' comments should provided directly to R. G. Page by c.o.b.

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Contact: R. G. Page
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Attachment 1

NATIONAL SECURITY COUNCIL
Washington, D.C. 20506

April 29, 1975

MEMORANDUM FOR

THE CHAIRMAN
NUCLEAR REGULATORY COMMISSION

SUBJECT: Annual Report to the President on Domestic Nuclear Safeguards

The President requested in a memorandum of April 27, 1974, that the Atomic Energy Commission, in coordination with other agencies, submit an annual report on the effectiveness of the nuclear safeguards systems, program developments, and related recommendations regarding the domestic control and security of nuclear materials and facilities. Following the Energy Reorganization Act of 1974, the Energy Research and Development Administration, working with other Executive Branch agencies, has undertaken the preparation of this report. Since the NRC has extensive responsibilities in domestic safeguards, your contribution to the annual report would be most valuable. The President has indicated that he would welcome the contribution of your staff and the comments of your Commission in developing this annual report on domestic safeguards, and would hope that your organization would be prepared to participate.

/s/

Henry A. Kissinger

cc: The Administrator, Energy Research and Development Administration

Attachment 2

[redacted]

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

May 20, 1975

ADDRESSEES ON LIST ATTACHED

DRAFT ANNUAL REPORT ON DOMESTIC NUCLEAR SAFEGUARDS

The enclosed draft Annual Report to the National Security Council on the Status of Domestic Safeguards and the proposed transmittal from this Administration, respond to a request in the April 27, 1974, National Security Decision Memorandum No. 254, Domestic Safeguards. This draft material is forwarded to you in recognition of your interest in the subject, and participation in the original study last year.

We are interested in any suggestions you may have on this draft. Therefore, we plan a meeting on the subject, which you or your representative are invited to attend, at 9:00 a.m., Wednesday, June 4, 1975, in Conference Room A-132, ERDA-Germantown, to discuss and resolve any problems which may be presented by such suggestions. Meanwhile, please feel free to contact me (973-5106) or William C. Bartels (973-5216) about the draft report.

It is our plan to finalize the report and forward it for final coordination to the National Security Council on or about June 10, 1975.

/s/

Robert E. Tharp, Acting Director
Division of Safeguards and Security

Enclosure:
Prop. ltr. Seamans/Kissinger re;
Annual Rpt. on Domestic Safeguards, w/encls.
(Exhibits 1 & 2), Conf./NSI

cc: [redacted]
Clarence M. Kelly, Director, FBI
Attn: W. Raymond Wannall, Asst. Dir., Intelligence Div.

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ADDRESSEES - DRAFT ANNUAL REPORT ON DOMESTIC NUCLEAR SAFEGUARDS

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for Oceans and International Environmental &
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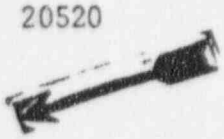

Mr. L. V. Gossick
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Mr. Donald R. Cotter
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DRAFT 5/9/75
(Revised 5/19/75)

Honorable Henry A. Kissinger
Assistant to the President
for National Security Affairs

Dear Dr. Kissinger:

Enclosed is the annual report on the Status of Domestic Safeguards (Exhibit 1). The report is forwarded in accordance with the request made in National Security Decision Memorandum 254, Domestic Safeguards, April 27, 1974.

Improvements are reported in the domestic safeguards system including the licensed and license-exempt sectors and including coordination with the Federal Bureau of Investigation. This report has been prepared with the assistance of the Nuclear Regulatory Commission and their views have been incorporated. In addition, the Nuclear Regulatory Commission may submit a separate report.

In brief, improvements have been made in protection of nuclear materials in transit and at fixed sites, as well as in capability to respond to certain adversary actions. Some improvements have been accomplished within ERDA resources and plans have been proposed for removing other deficiencies, identified in Exhibit 2, at ERDA facilities. Safeguards at licensed operations have been improved by licensee response to regulations which became effective during the last year; additional regulations have been published for comment but await implementation. Communication

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and training links with the Federal Bureau of Investigation also have been improved. The cycle of overall improvement is in progress and additional refinement is anticipated in the coming year.

We recognize the need to assess and balance the safeguards system beyond the obvious measures currently identified and have under development a general systems approach which includes development of implementation procedures, equipment and facilities. Activities incident to operational planning and implementation of the procedure are being initiated and are expected to lead to routine reporting of future evaluations of the safeguards system in terms related to risk to the public.

Sincerely,

Robert C. Seamans, Jr.
Administrator

Enclosures:
Exhibit 1 - Status of Domestic Safeguards
Exhibit 2 - Letter to OMB from ERDA with Exhibits, April 4, 1975

cc: w/encls.
W. A. Anders, Chairman, NRC
D. R. Cotter, Assistant to the Secretary of Defense (Atomic Energy)
C. M. Kelley, Dir., FBI
Attn: W. Raymond Wannall, Asst. Dir., Intelligence Div.

Concurrence:
Bartels/Schleter McDowell Brenner Tharp Giller Starbird Romatowski
Seamans Anders FBI

Controls SS 2848 & Admin. 05017535

[redacted]

May 6, 1975

STATUS OF DOMESTIC SAFEGUARDS

Document classified by:

[redacted]

William [illegible] Bartels
Act[illegible]sst. Dir[illegible] for P&S, SS
U.S. ERDA, 5/20/76

INTRODUCTION

Reference

In response to the conclusion of the Domestic Safeguards Section of NSSM-120[1], NSDM-254[2] requests an annual report on the effectiveness of the safeguards system, program developments, and related recommendations.

Perspective

Safeguards requirements applied to nuclear materials differ in detail and in implementing mechanisms depending on the form, possession, and ownership of the material. Responsibilities for promulgation and enforcement of nuclear materials safeguards requirements and regulations have been delegated (Atomic Energy Act of 1954, as amended) to the Energy Research and Development Administration (ERDA), the Nuclear Regulatory Commission (NRC), and the Department of Defense (DOD). Implementation of safeguards and security requirements is the responsibility of the physical possessor of the nuclear material and the delegated federal agency.

ERDA is responsible for promulgation and enforcement of requirements and funding of protective measures relating to material in the possession of ERDA contractors operating government-owned or government-leased plants, except for certain demonstration power reactors and high-level waste storage facilities. Protection of the material is generally graded according to the potential

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hazard which could result from willful misuse of that particular type material. All classified materials are additionally protected from the viewpoint of their information content.

NRC is responsible for promulgation and enforcement of regulations for licensed facilities and materials. These facilities are:

- privately owned facilities containing either government-owned or privately-owned material;
- certain DOD-owned facilities and material (other than that covered by paragraph 91.b of the Atomic Energy Act of 1954, as amended);
- certain ERDA facilities (as noted above);
- certain other government-owned facilities containing government-owned or privately-owned material; and
- state-owned facilities.

DOD is responsible for promulgation and enforcement of requirements and funding of protective measures for all classified material (covered under paragraph 91.b of the Atomic Energy Act of 1954, as amended) in its possession. This material is principally in the form of weapons and military reactor fuels.

Parity in Application

ERDA and NRC are required to consult and coordinate (Energy Reorganization Act of 1974) on all aspects of nuclear materials safeguards to assure parity in the protection afforded similar nuclear material under their respective jurisdictions. The basis for this parity is that, lacking parity, an adversary may preferentially choose the weaker system to assault; consequently, extra resources used on the stronger system may not be effectively allocated.

Objective of Safeguards

The general safeguards objective is to achieve a level of protection against willful actions involving the possession of nuclear materials or the sabotage of nuclear facilities to ensure against a significant increase in the risk of death, injury, or property damage to the public from other causes beyond the control of the individual. The general objective can be met by reducing the frequency of attempts to produce these societal consequences, by reducing the likelihood of adversary success when an attempt is made, and by reducing the consequences of a successful act. The effectiveness of the safeguards system is measured by the extent to which these objectives are met.

Acceptable Level of Protection

The question of acceptable risk, or level of protection, should be answered

in terms of the preservation of the basic freedoms of our society and in terms of allocation of national resources. The preservation of individual freedoms is considered in terms of acceptability of specific mechanisms proposed for the safeguards system, if there are possible impacts due to such mechanisms with respect to individual freedoms and overall societal benefits. Examples of this type of question are raised by the legal, political, and social implications of the Federal Guard Force concept, more heavily armed guards, or greater proliferation of guards, personnel clearance versus right-to-work, and possibly "no knock" entry and search and recovery.

National resources utilized for safeguards can be divided into a number of categories according to the source and application of the resources, namely: federal resources for implementation, for R&D, and for overall program administration; and private resources, expenditure of these resources on nuclear safeguards precludes their use for some other benefit to society. Thus, the reduction of risk arising from malevolent acts involving nuclear materials should be balanced, in the largest context, in terms of the benefits provided against all other benefits which could potentially be obtained from these resources.

PROGRAM DEVELOPMENTS

Overview

The safeguards systems must continue to evolve with the changing

technological, social, and political environment. There are changes in nuclear activities, for example, that introduce changes in safeguards. Growth is anticipated in uranium enrichment; fuel fabrication and reprocessing including plutonium recycle; high temperature gas-cooled and breeder reactors; radioactive storage areas and transportation of nuclear materials. Major efforts are underway to develop and implement improved systems for the entire nuclear cycle.

In most instances the current domestic safeguards requirements, regulations and practices are deemed effective for present conditions; in others the deficiencies have been identified and are under management review. However, assessments of systems effectiveness are continually being made and measures to further strengthen safeguards are under continuing development in order to ensure the future effectiveness.

An iterative procedure for evaluation and improvement of safeguards as described under Program Structure is being refined and used in approaching the safeguards problem and its solution. In addition, results of preliminary evaluations of the current system have already led to some implementation actions. A major upgrading has begun on safeguards operations including material control and accounting systems and physical protection. Protection for material in transit, and capabilities for threat evaluation and response to attack are each being upgraded. Regulations governing licensed facilities have been strengthened and improvements have been made in ERDA operations within available resources. Additional improvements which have been identified as needed for the ERDA system are described in Exhibit 2.

Program Structure

Figure 1 is a schematic diagram of the six elements of the safeguards program illustrating the four major areas of safeguards operations (systems evaluation and policy development (III); safeguards approval and inspection (IV); facility and transport safeguards implementation (V); and interagency activities (VI)). Figure 1 also shows the interaction of the safeguards research and development program (II) with other safeguards activities.

The environment of safeguards is continually changing. Changes occur in perceived threats, political climate, available resources, technical capabilities of potential adversaries, and in the distribution of target materials in government and private industry. A changing environment makes it imperative that there be a periodic review of the current and potential status of the safeguards system accompanied by identification of any necessary modifications. The modifications may range from implementation of new measurement procedures to redirection of resources to reflect perceived changes in the likelihood of attempt. The Figure illustrates this iterative nature of safeguards system improvement in the four major areas of safeguards operations.

Systematic Approach

The objective of safeguards was stated in terms of maintaining an acceptable

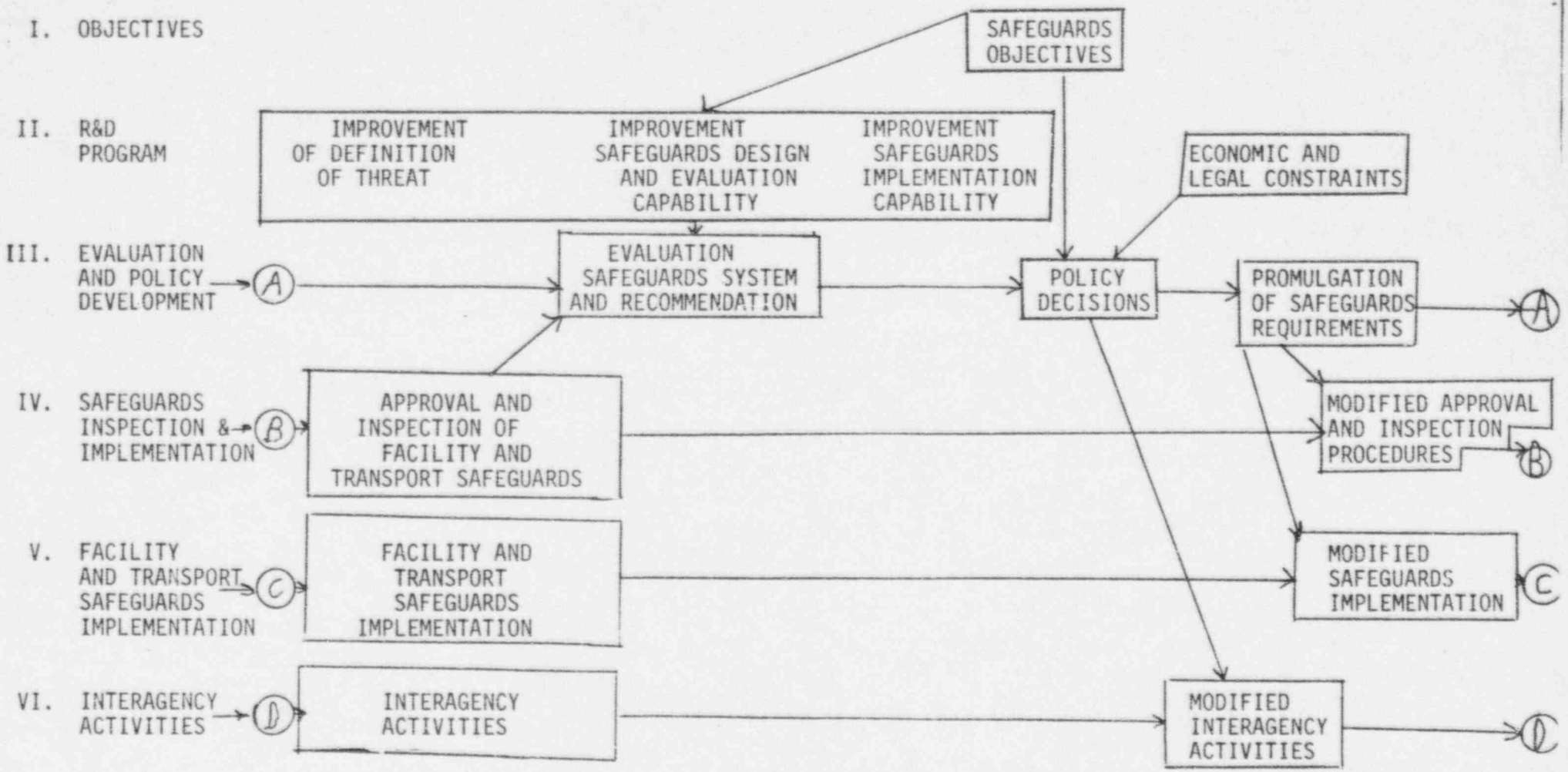

Figure 1. Safeguards program elements.

level of risk to the public. A systematic approach is being implemented to assure that this objective will be met. This includes not only knowing that enough has been done for certain specific problems, such as facility perimeter systems or transportation safeguards, but knowing that resources have been allocated to provide a system balanced in terms of overall risk to the public. Risk to the public, or societal risk, is the frequency with which willful acts against the public involving nuclear materials will be attempted; multiplied by the likelihood that an adversary will succeed in completing his act in the presence of the safeguards system; multiplied by the consequences to the public if his act is successful. This approach commences with an examination of all different possible events an adversary could perpetrate involving nuclear material or nuclear facilities which could produce consequences; it results in identification of safeguards mechanisms which provide adequate protection against these events.

The sequence of adversary actions which must be completed to perpetrate an event in turn implies a structure of subsystems within the safeguards system. The subsystems of safeguards are the collections of all activities directed toward: the interruption of the individual adversary actions; or reducing the frequency of attempt; or reducing the resulting consequences. A set of subsystems is given in Table 1. The improvements and status of the safeguards

Subsystem Reference	Safeguards Sub-objective	Adversary Action	Adversary Mode
1	Reduce Frequency of Attempt		
2	Reduce Probability of Sequence Completion	Preparation Activities	
3a	" "	Unauthorized Access - Fixed Site	Force
3b	" "	" "	Stealth
3c	" "	" "	Deceit
4	" "	Diversion	
5a	" "	Unauthorized Removal - Fixed Site	Force
5b	" "	" "	Stealth
5c	" "	" "	Deceit
6a	" "	Unauthorized Access - In Transit	Force
6b	" "	" "	Stealth
6c	" "	" "	Deceit
7	" "	Unauthorized Removal - In Transit	
8	" "	Smuggling of Material	
9	" "	Black Market Acquisition	
10	" "	Manipulation, Damage or Destruction of Equipment or Material - Fixed Site	
11	" "	External Penetration - Fixed Site	
12	" "	External Penetration - In Transit	
13	" "	Post Possession Material Preparation	
14	" "	Delivery to Event Location	
15	Reduce Consequences		

Table 1. Subsystems of Safeguards in Terms of Sub-objectives of the Safeguards Program and the Adversary Actions to be Countered.

system are organized below according to the program structure discussed earlier and the safeguards subsystems listed in Table 1.

Improvements in Safeguards

1. Relating to Frequency of Attempt

   Public statements have been made which communicate the existence and strengths of safeguards efforts thereby deterring potential adversary actions. Recently amended Reward Statutes provide additional deterrence.

2. Relating to Preparation Activities

   The FBI and the CIA are the principal agencies involved in detection of an adversary preparation activity. In the past year improved communication links have been established between ERDA and FBI to permit more rapid emergency exchange of messages, drawings, and other written information. Training courses on nuclear matters have been presented to the FBI by ERDA to familiarize FBI agents with nuclear terminology, technology, instrumentation, and other information which will assist them in identification of adversary preparation activities. Continuing communication is being maintained with the CIA to insure that Agency's awareness of ERDA's intelligence needs in the area of nuclear threats.

3. Fixed Site - Relating to Unauthorized Access

   a. and b. By Force or By Stealth

[redacted]

ERDA:

Extensive analysis of physical protection safeguards deficiencies was performed relative to proposed stronger physical protection requirements and those deficiencies have been explicitly identified and documented in a task force report for seventeen major ERDA facilities.[3] All corrections which can be made with existing resources have been or are being made. Funds to correct the remaining deficiencies for prevention of access by force or stealth were requested in the FY 1975 Supplemental but were not allocated. Request for these additional funds have been included in the Safeguards FY 1976 Amendment. Currently the physical protection deficiencies remain and the proposed stronger requirements have not been issued. The status of physical protection is that situations exist where attack by armed individuals would probably not be repulsed and control of the nuclear material could be endangered.

The probability of adversary success on attack has additionally been reduced by promulgation of instructions to shoot to kill if this level of force is necessary to prevent the loss of nuclear weapons and nuclear explosive devices.

NRC:

In Novmeber 1973 the Commission published comprehensive amend-

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ments to its regulations to strengthen the protection of nuclear plants against industrial sabotage and to strengthen the protection of SNM against theft. During 1974 the protection measures called for by these requirements were implemented at the 23 licensee sites which are authorized to possess more than five kilograms contained fissile material in attractive forms. In addition, the protection plans for 52 nuclear reactor units were reviewed and approved.

In November 1974, the Commission published new proposed amendments for physical security at nuclear power reactors.

c. By Deceit

ERDA:

The control of unauthorized access by deceit at ERDA facilities is achieved by a clearance procedure, by badge access for cleared employees and by random package search authorization.

NRC:

The November 1973 regulation amendment provided for badge access control to licensee sites. All packages and individuals are searched on entering and exiting a protected area and all vehicles are searched on exit.

4. Fixed Site - Relating to Diversion of Material

ERDA:

Diversion of material is prevented in large part by a clearance procedure and by further limits on access to sensitive areas like storage vaults. In addition, materials control and accountancy techniques are also used. Recent studies are available which provide information concerning deficiencies in this latter area.[3] Funds for correction of some deficiencies were requested in the FY 1975 Supplemental but were not allocated.

NRC:

Commission requirements for the control and accounting of special nuclear material at licensed plants were revised in November 1973 to provide greater sensitivity and timeliness for detecting the theft or diversion of material. Quality specifications were prescribed for performing plant material balances on the basis of measurements. These upgraded requirements were implemented during 1974 at the 30 facilities which were authorized to possess more than one effective kilogram of SNM in unsealed form. In October 1974 the Commission issued amendments to its regulations for control and accounting of SNM.

5. Fixed Site - Relating to Unauthorized Removal of Material

a. By Force

Protection measures intended to deny forced access will apply to forced removal. Such measures include intrusion alarms, guards and barriers.

ERDA:

Each FBI office has prepared contingency plans, in coordination with the local ERDA facility, to be used in responding to any emergency involving a nuclear threat. The plans provide for a coordinated response by Federal, State, and local agencies in the particular area. In some cases these contingency plans have been field tested.

NRC:

NRC regulations which became effective in 1974 require that licensees establish liaison with local law enforcement authorities. In developing security plans, licensees must take into account the probable size and response time of the local law enforcement assistance.

b. By Stealth

ERDA:

The vulnerability in ERDA facilities due to the lack of SNM door-

way monitors has been identified and documented.

NRC:

Regulations and accompaning guides have been issued on detection of SNM removal by stealth. Individuals within a material access area must be observed to assure that SNM is not being diverted; and be searched for concealed SNM, possibly by a doorway personnel monitor, before leaving the area.

c. By Deceit

ERDA:

Employee clearances and access controls reduce the risk of deceit. Materials custodians monitor plant operations. Duplicate record systems, local and central, and shipper-receiver measurements also reduce the risk of deceit. ERDA has begun research and plans to demonstrate major improvements in the timeliness and completeness of accountability measures for nuclear materials while they are in materials processing operations.

NRC:

Legal authority has been obtained for requiring that access to SNM be limited to employees with clearances (PL-93-377). Methods of implementation are under study. Requirements for control and accounting of SNM were revised to provide greater sensitivity and timeliness for detecting theft or diversion.

6. In Transit - Relating to Access to Material

a., b., and c. By Force, By Stealth, or By Deceit

ERDA:

The one item which was funded in the FY 1975 Supplemental was for protection of material in transit. As a result by October 1976, there will be major improvement in protection given to all ERDA highway shipments of strategic SNM. They will be made in vehicles specially designed to impede forced access to the cargo or movement of the vehicle. Weapons assembly shipments are transported by such vehicles at the present time. Additional funds to include the remaining ERDA shipments have been requested. Further, all shipments now must be accompanied by a minimum of two armed ERDA couriers. Improvements to the existing SECOM communication system between the transit vehicles and a central control are also being implemented.

NRC:

During 1974 new rules for protection of SNM in transit were applied to 10 licensees and 5 transportation companies. These rules proyide for: improved control of material in transit; two armed escorts to accompany land shipments; and use of specially designed motor vehicles (if such are not available, a separate escort vehicle with at least two armed guards must be used).

7. In Transit - Relating to Removal of Material

ERDA:

The improved control of access to material in transit is coordinated with the improved communication facilities and the FBI contingency plans in cooperation with local and state law enforcement authorities. The design response time is two hours against an armed attack.

NRC:

All land vehicles (highway and rail) are required to be equipped with radiotelephone. Calls must be made at predetermined intervals normally not to exceed two hours; and if calls are not received when planned, the licensee or his agent must immediately notify an appropriate law enforcement authority and the NRC. These plans have been reviewed and approved by the NRC.

8. and 9. Relating to Other Means of Material Acquisition

Liaison is to be established between ERDA and the Treasury Department and thereby to Interpol in order to acquire another intelligence source, in addition to the FBI and CIA, relating to possible black market operations or smuggling operations.

10. thru 14. Relating to Utilization Activities

Safeguards activities relating to adversary utilization activities are

those related to recovery or degradation of material given that the adversary has gained control of the material. Extensive effort has gone into the development of portable detection instruments for use with hand-carried or helicopter or truck search efforts. This development has largely been completed and some detection capability now exists. Resources have been requested to achieve a modest quick response search capability. This effort is a part of the Nuclear Emergency Search Team (NEST) Program which has demonstrated capability for departure to the site of the emergency within two hours of an alert. Staff and equipment are located at Las Vegas, Nevada; Los Alamos, New Mexico; and Livermore, California.

Support has been provided to the FBI recovery activities in the form of four briefcase detectors capable of detecting the presence of SNM in certain situations. An agent from each FBI office where the detectors have been deployed has been given detailed operating instructions at the Los Alamos Scientific Laboratory.

The contingency plans of each FBI office include consideration of potential situations where control of the SNM may have passed to the adversary and recovery is required. Related ERDA capabilities are being developed for assessment of possible nuclear explosive devices.

15. Consequence Reduction

Studies and plans for coordination with the Office of Preparedness have been initiated.

RECOMMENDATION

The National Security Council may wish to support the ERDA recommendation to OMB that funds be allocated to implement corrective actions for a number of deficiencies in the government-facility sector which have been identified and documented.[3] Funds for such actions were requested by AEC in a FY 1975 Supplemental but were granted only to the extent that they applied a correction of transportation deficiencies. Other deficiencies remain and funds for correction are being requested in a proposed amendment to the FY 1976 Congressional Budget. These corrections do not additional R&D; all requisite technical capability has been developed. Only funds for implementation are lacking.

In connection with ERDA responsibilities for developing new reactor concepts, ERDA also develops proposed solutions to safeguards and security problems that might be foreseen for the entire new reactor fuel cycle. These are then described in the Generic Environmental Impact Statement developed by ERDA. However, once the new cycle is developed, the responsibility for licensing applicants desiring to engage in commercial activities involving the new cycle is that of

the Nuclear Regulatory Commission. There is no assurance that the Nuclear Regulatory Commission will accept as adequate for licensing action the safeguards and security measures developed by ERDA for the Generic Statement. While there may be reasonable basis for some differences in specific detail to exist between ERDA and NRC safeguards and security measures, it would appear that NRC should accept the major features and principles of safeguards and security developed by ERDA in connection with the Generic Statement. It is suggested that the National Security Council seek Congressional support for directing NRC to accept the major features of ERDA-developed safeguards and security measures and principles for new reactor concepts and related fuel cycles.

There are analogous needs in ongoing fuel cycle operations now licensed by the Nuclear Regulatory Commission. In some cases nuclear fuel cycle licensees experience a need for research and development assistance of a generic nature in order to comply with requirements related to safeguards as established by the Nuclear Regulatory Commission and published in the Code of Federal Regulations. ERDA has in the past performed such research and development both to facilitate compliance and to improve safeguards effectiveness generally. Since such effort by ERDA could be deemed an indirect subsidy to the nuclear power industry (ERDA developing solutions required by licensees so that

they can comply with NRC safeguards regulations), it is considered desirable to have the endorsement of the President in order for such ERDA research and development work to continue. Accordingly, it is recommended that the President endorse the concept of direct ERDA research and development effort, primarily to enable licensees to satisfy safeguards requirements established by the Nuclear Regulatory Commission.

REFERENCES

1. NSSM-120 Domestic Safeguards, DSS, AEC submitted February 15, 1974.
2. NSDM-254 Domestic Safeguards, NSC to Chairman, AEC, April 27, 1974.
3. Letter to OMB from ERDA with Exhibits, April 4, 1975 (Exhibit 2).

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D. C. 20545

Mr. James T. Lynn
Director
Office of Management and Budget
Room 252, Executive Office Building
Washington, D. C. 20503

Dear Mr. Lynn:

Mr. Ash's letter dated February 3, 1975, requested an updated safeguards plan in the areas of ERDA responsibility, as suggested in the OMB letter of September 23, 1974. That earlier letter recommended that we divide the safeguards efforts into three phases:

> "First - Immediate action to correct serious, known deficiencies in the U.S. safeguards system using currently available resources;"
>
> "Second - Action to improve your present report by better prioritizing needed actions, reducing the timetable for certain actions, and the inclusion of plant-by-plant assessment of needed safeguards improvements;" and
>
> "Third - Action by AEC to prepare an expanded version of year August report to provide a firm and comprehensive base for all future Administration management, legislative, and budgetary actions on this problem."

With regard to the first phase, there are several actions that have direct impact. These are:

1. A task force was established by the AEC's General Manager to determine the resources needed to correct deficiencies in physical protection safeguards measures and to evaluate how strengthening might be accomplished;

2. Specific analysis of major nuclear materials control and accountability deficiencies was completed in 1974;

3. Needed additional research and development to provide the capability for more timely and accurate quantitative measures of nuclear materials in process and in storage as well as to provide improved technology for physical protection of nuclear material in all environments has been identified; and

4. The capability for detecting and locating nuclear materials and for technically evaluating and responding to nuclear threats has been found to be in need of rapid improvement by ERDA management.

ERDA management has evaluated the identified actions in Items 1. through 4. above. The results of this evaluation are discussed in the enclosed Exhibit 1. Enclosed as Exhibit 2 is a copy of the task force report which identifies a total of $56.5 million of additional resources needed in FY 1976 to correct the most urgent deficiencies in the current physical protection safeguards systems.

Estimated additional funding of $21.3 million would be necessary to achieve the upgrading of materials control and accountability; the additional research and development; and improvements in detection and response capabilities, as discussed in Items 2., 3., and 4. above.

The threat to nuclear materials and facilities from terrorist violence is such that we must improve the safeguards system. I consider this upgrading to be of such pressing importance that additional FY 1976 funds should be provided for this effort. Therefore, I am proposing that $77.8 million be added to the FY 1976 budget as an amendment. The additional funds will include $56.5 million to complete the correction of the most urgent physical protection deficiencies; $9.9 million for additional research and development efforts; $7.9 million for materials control and accountability; and $3.5 million to improve our detection and response capabilities. A detailed breakdown of this amendment is given in Exhibit 3.

The second and third phases in the OMB letter of September 23, 1974, require that ERDA generate a program and define a plan for the safeguards system. Exhibit 4 presents the current status of our progress on this program planning for safeguards and security of nuclear materials and facilities. It contains a schematic representation on page 3 of the parts of this program and their interrelatioships. Establishing priorities and conducting plant-by-plant assessments of needed improvements are longer-term tasks which will establish the "firm and comprehensive base" for future safeguards action, including a clear definition of the Administration's safeguards policy in terms of its scope, purpose, and rationale. The rapidly changing public attitudes on these matters present a moving target; they will be considered, as desired and necessary changes are made in the definition of safeguards policy. Therefore, we developed a "societal risk" approach to safeguards that will permit more systematic priorities and clearer goals.

We will keep you informed of our progress in defining the program, goals, and priorities needed for management, legislative, and budgetary actions in this area.

Sincerely,

Robert C. Seamans, Jr.
Administrator

Enclosures:
1. Exhibit 1 - "Management Assessment SNM Safeguards," dated April 2, 1975
2. Exhibit 2 - "Summary Task Force Report on Physical Protection Safeguards Deficiencies," dated April 2, 1975
3. Exhibit 3 - "Safeguards FY 1976 Amendment," dated April 2, 1975
4. Exhibit 4 - "Updated Program Plan for ERDA Safeguards Activities," dated April 2, 1975

Exhibit 1 4/2/75

MANAGEMENT ASSESSMENT
SNM SAFEGUARDS

The Energy Research and Development Administration has a statutory obligation to guard against the diversion of special nuclear material. In recent years this obligation has taken on new dimensions. In the 1960's it was a domestic radical element, but in the 1970's a world-wide terrorist threat developed.

In 1972 when the White House asked whether the AEC could protect SNM and nuclear facilities from such terrorism, the answer was qualified. The system was adequate for the nature of the program in the environment of the then current threats but seriously in need of upgrading for the foreseeable future program in the new threat environment. A review in 1973 and again in 1974 confirmed this need.

The facilities of ERDA are operating under physical protection systems which were implemented in the late 1940's and which have undergone severe attrition in the intervening years. Guard forces have been reduced in a series of economy measures; fencing and lighting, although given normal maintenance, have deteriorated with age.

Security technology, which has made rapid strides in recent years, has not seen extensive application at nuclear facilities because of a lack of funds. Perimeter alarm systems which would permit more effective and economical use of guards have not been installed. A testing program has identified satisfactory systems but a lack of funding exists for installation.

PHYSICAL PROTECTION

Physical protection upgrading measures urgently needed at ERDA facilities as identified in the Task Force Report are described below:

Weapons Facilities

The Pantex Plant is the most critical ERDA facility because of the large concentration of complete nuclear weapons located there. It requires additional perimeter fencing, perimeter alarm systems, hardened guard stations, armored escort vehicles and a new security command center. Additional guards are also needed. The total amount required for upgrading Pantex is $4,383,000.

The second most critical location, the Nevada Test Site, also contains nuclear weapons or devices, although not in the quantities encountered at Pantex. Because of the isolated location of a number of its guard stations, the Nevada Test Site has an immediate requirement for the

hardening of a number of guard stations. Other badly needed improvements are the armoring of escort vehicles, a special enclosure for transporting weapons, night vision devices and special guard support equipment. Total upgrading costs, including those for additional guards, is $1,090,000.

The Los Alamos Scientific Laboratory assembles complete nuclear weapons or test devices for operations at the Nevada Test Site. Consequently, LASL has a high priority requirement for the installation of perimeter alarm systems, additional fencing, hardened guard stations, central station monitoring equipment, the alarming of a number of remote points, additional lighting, space alarms in vaults, various vault modifications, the hardening of guard headquarters and communications centers, and the armoring of escort and patrol vehicles. Total cost, including additional guard force positions, would be $4,124,000.

The Rocky Flats Plant contains a high concentration of plutonium in weapons part configurations. The strengthening of physical protection at that location would require the installation of perimeter alarm systems, the hardening of guard stations, various modifications to an existing alarm system, the armoring of patrol vehicles and the procurement of night vision devices. The total cost, including positions needed to strengthen the guard force, would be $5,370,000.

Improvements at the Lawrence Livermore Laboratory will cost $1,745,000. The improvements would include hardened guard stations, night vision devices, portal monitors, duress alarms, perimeter fencing, armored vehicles, and additional lighting. The relatively high priority given improvements at this site is based upon the presence of nuclear weapons components in sufficient quantities to materially aid in construction of a clandestine explosive.

Because of its importance to the weapons program, Y-12 is in a critical status insofar as the upgrading of physical protection measures is concerned. Needed corrections include the installation of key card controls for better internal segregation, remote monitors, portal monitors, intrusion alarms and new lighting. In addition, modification of a guard changehouse would be required. Total cost would be $9,980,000. Costs for more guards are included in this figure.

Requirements at other weapon facilities would total $2,456,000, bringing the total for all weapons facilities to $29,148,000.

Production and Research Facilities

The Savannah River Plant has large quantities of plutonium in weapons-grade form in storage and in process; consequently, it is an attractive target for theft or sabotage. To bring this site to reasonable physical protection standards, it requires the installation of perimeter alarm systems, perimeter

fences, vault-type alarms, portal monitors and electronic door controls. It is also necessary to harden a number of guard stations. Also required are night vision devices, new weapons, and communications equipment. Total costs, including those involved with the supplementing of the guard force, are $1,925,000.

The importance of the Portsmouth Plant lies in the presence of large quantities of uranium in weapons-grade form. If the physical protection system is to be adequately upgraded, Portsmouth requires the installation of perimeter alarm systems, as well as perimeter fencing and lighting. Also required are certain building modifications, the construction of vaults and the installation of key card controls. Closed circuit television and portal monitors are also considered essential. The total cost for upgrading Portsmouth facilities and hiring additional guards, would be $11,661,000 including $5,134,000 for seriously needed vaults and storage facilities for highly enriched uranium.

The production facilities at the Idaho National Engineering Laboratory have large quantities of special nuclear material in potential usable form. To upgrade this facility to the desired standard, closed circuit television should be installed at a material access area, portal monitors are required and night vision devices are needed. The upgrading costs for this facility total $370,000, net including guard costs which are included elsewhere for the total INEL site.

The Richland program, under the Division of Production budget requirements, contains large quantities of weapons grade special nuclear material. At this Richland facility the installation of perimeter alarm systems and fencing as well as perimeter lights are required to improve the capability of the site guards to detect intruders. Hardened guard stations, night vision devices, guard vehicles, closed circuit television and portal monitors are also badly needed. Total cost would be $2,445,000, including additional guards.

Other facilities not described above include the Argonne National Laboratory, ORNL, the LBR-II and TREAT reactors, the Brookhaven Laboratory and Battelle, West Jefferson, as well as the Reactor Safety Research facility located in Idaho. Total funds required to upgrade these locations would be in the order of $10,922,000. The major physical protection measures needed at these facilities include fencing and alarms, lights, CCTV, monitors, and guards.

MATERIALS ACCOUNTANCY

Examination of the overall role of materials accountancy has led to identification of adversary action sequences in which accountancy is necessary for safeguards and complementary to physical protection. However, the existing accountancy system and the materials measurement capability it employs must be made more rapid, comprehensive, and precise in detecting changes in amounts of material on hand. These needs relate

directly to performance objectives for the safeguards system; the detection capability of an accountability system also adds deterrence against diversion from within. Not only would an upgraded materials accountancy system strengthen detection and deterrence capabilities, but the data from such a system could prove to be an essential element of any investigatory activity.

Major needs for upgrading accountancy operations were identified at Los Alamos Scientific Laboratory ($1.2 million); Rocky Flats Plant ($1.4 million); Savannah River Plant ($2.4 million); and the Z-Plant for processing and storing plutonium scrap and products at Richland ($1.0 million). Other needs ($1.9 million) were identified at six other sites. All the above sites need staff to measure materials on hand and in shipments and to operate accountability systems using the measurements. Los Alamos Scientific Laboratory has available most of the equipment needed for measurements and accountability but requires staff, $1.0 million out of the above $1.2 million total, to operate the equipment for materials accountability purposes. Needs at Rocky Flats are primarily for safeguards instruments for materials measurements and input-output computer terminals for using the measured data in accountancy operations. The Savannah River Plant has the largest single need for equipment funds for measurement equipment, $1.2 million out of the above $2.4 million. This includes additional laboratory, chemical, and non-destructive assay equipment and additional measurement equipment for materials which are in process, storage, or shipment. The Z-Plant, at Richland, needs the construction of an assay facility for making non-destructive measurements. The present rate of making measurements is too low for periodic physical inventories. Existing instruments will be moved to a more central location and shielding will isolate the instruments from radiation background. Additionally, measurement tanks will be installed at the Z-Plant to eliminate uncertainties in plant throughput and thereby reduce differences between book and physical inventories.

RESEARCH AND DEVELOPMENT

To assure the optimization of safeguards assurance in return for resources expended, management has determined that research and development of a comprehensive system design must be accomplished for nuclear weapons and materials as soon as possible. In this way, a design balance can be achieved which will identify the proper mix of barriers, alarms, guards, weapons, monitors, measurements, accountancy balance areas, and surveillance. The system design must also identify the specific hardware development needs. Funding to accelerate the research and development effort is $9.9 million.

DETECTION AND RESPONSE CAPABILITY

The capability to find stolen nuclear materials by search and detection techniques is not adequate. Needed capabilities include pre-defined and pre-positioned equipment for use in providing law enforcement with technical assistance within two hours; airborne and ground search equipment adequate for completing an area search within two or three days; diagnostic services for assessment of a possible detected device; advisory services on safing and disposal of possible nuclear explosives; and a minimal array of detection equipment for monitoring vehicles at roadblocks. Needed funding for both equipment, procurement, and training of personnel to operate the equipment is $3.5 million.

Exhibit 2

4/2/75

SUMMARY TASK FORCE REPORT

ON PHYSICAL PROTECTION SAFEGUARDS DEFICIENCIES

Background

On September 25, 1972, the President issued a memorandum which directed the establishment of a Committee to Combat Terrorism. As a consequence, the Atomic Energy Commission evaluated the ability of its facilities to withstand terrorist attacks and subsequently requested, in a letter dated May 20, 1974, to the Director of OMB, supplemental funding in the amount of $87.6 million to correct deficiencies in the physical protection system. OMB reviewed the request and recommended supplemental funding of $18 million to upgrade safeguards in transportation of significant quantities of special nuclear material. Congress reduced the supplemental funding to half of that requested and added $2.5 million for safeguards research and development.

Reflecting increased public and official alarm over the possibility that SNM will be diverted, the Chairman of the National Security Council, on April 27, 1974, sent National Security Decision Memorandum 254 on the subject of domestic safeguards to the Chairman of the Atomic Energy Commission. The memorandum indicated that the President had directed that a priority effort be dedicated to ensuring the adequacy of the safeguards system and requested that the AEC "submit an annual report on the effectiveness of the safeguards system program developments and related recommendations for his consideration."

National Security Study Memorandum 202, dated June 21, 1974, stated: "Apart from the question of deliberate decisions by governments to mount weapons programs if the possibility of theft of nuclear materials by radical organizations, revolutionary groups or crime syndicates and the prospect of deliberate sabotage. As the commercial nuclear power industry expands and spreads throughout the world, the opportunities for such actions will increase. These scenarios can pose a serious threat to U.S. security by raising international tensions, endangering American citizens or facilities abroad, and possibly leading to military conflict involving nuclear explosives or radioactive materials."

On July 8, 1974, the Associate Director of the Office of Management and Budget, Frank Zarb, requested that the AEC submit a report in compliance with National Security Decision Memorandum 254. The report was forwarded on August 7, 1974, and in a letter dated September 23, 1974, Mr. Zarb recommended that the AEC's additional safeguards efforts" be divided into three phases which were:

"First - Immediate action to correct serious known deficiencies in the U.S. safeguards system using currently available resources;

"Second - Action to improve your present report by better prioritizing needed actions, reducing the timetable for certain actions, and the inclusion of a plant-by-plant assessment of needed safeguards improvements; and

"Third - Action by AEC to prepare an expanded version of your August report to provide a firm and comprehensive base for all future Administration management, legislation and budgetary actions on this problem."

The General Manager of the AEC, on October 9, 1974, appointed a task force consisting of representatives of four divisions and the Office of the Assistant General Manager, Controller. Consistent with the first recommendation of the September 23 Zarb letter, the task force was directed to "identify the most serious deficiencies at GM facilities, and the corrective actions which can be taken during FY 1975 and FY 1976 with available resources."

The task force proceeded to evaluate facilities based upon a proposed revision of Manual Chapter 2405 which related to the protection of special nuclear material. The manual chapter had been reviewed by the task force and its adequacy as a standard had been affirmed.

The task force review was limited to the identification of deficiencies in the physical protection of trigger quantities of special nuclear material. It did not include:

1. Research and development activities or transportation improvements which were included in the FY 1975 supplemental budget. Protective requirements for special nuclear material in less than "trigger" quantities are now being studied.

2. Material control and accountability activities. These have been the subject of recent exhaustive studies and adequate information concerning deficiencies in this area is available.

   Problems connected with the safeguarding of less than trigger quantities of SNM are currently being studied for the purpose of determining if smaller quantities should be placed under physical protection.

3. Transportation items for which additional funds were included in the FY 1975 supplemental budget.

A. Objectives

The primary objective of the task force review was to evaluate deficiencies that involved protecting trigger quantities of SNM that could be used to produce a warhead or bomb.

Objectives of the task force were as follows:

1. Primary Objective - To protect from an outside threat involving theft of a nuclear weapon.

2. Secondary Objective - To protect from an outside threat involving theft of a nuclear component.

3. Tertiary Objective - To protect from an outside threat involving theft of SNM.

In line with the above objectives and criteria, the task force divided the AEC sites into four categories as noted in Enclosure 1, with the weapons sites being the primary objective. In addition, within these sites rationale for upgrading was established. These general objectives and rational are noted in Enclosure 2.

B. Results of Field Office Submittals and Task Force Review

Field office submittals to correct all safeguards and security deficiencies totalled $83.3 million. Of this amount, $26.9 million are either (1) being funded or planned for funding in FY 1975 and FY 1976, (2) involving materials control and accountability of SNM, or (3) deleted as not being of immediate importance, and not included in the results of the task force review which follows.

The remaining field office deficiencies that require corrective action as determined by the task force total $56.6 million* consisting of:

Operating Funded Items	$ 8.5
Capital Equipment	7.4
General Plant Projects	9.2
Line Items	31.5
	$ 56.6

The task force identified field office requests for additional guards separately from other items. A summary of the task force recommendations is noted below and further details are provided as Enclosures 5 through 8.

*Cost summaries by program and location are attached as Enclosure 3.

	Deficiencies	Additional Guards
	(in millions)	
Complete Weapons	$ 4.6	$1.7
Nuclear Weapons SNM	10.0	3.7
Large Quantities of SNM	20.0	1.5
SNM Requiring Substantial Processing	13.6	1.3
TOTAL	$48.2	$8.2

C. Conclusions and Recommendations

Although the field office submittals cover many items to upgrade safeguards and security deficiencies, correction of these items will only be a first step in solving the overall AEC safeguards problems. Several areas need to be further resolved, such as the establishment of uniform criteria for physical security, safeguards of nuclear materials and resistance against a certain size terrorist attack, so that sites can be evaluated on a consistent basis.

It is also recommended that an in-depth study be made by SS (on a site-by-site basis) to determine (1) the effectiveness of existing sites, (2) the improvements gained by correcting the field office submitted deficiencies, and (3) recommendations for further corrective action needed.

In addition, it appears the overall guard force at the AEC sites needs to be substantially upgraded primarily in terms of training, age level and capability to resist potential terrorist attacks.

It should be recognized that if the plan of action to correct deficiencies for the safeguards program is similar to that followed for the Fire, Safety and Operating Conditions program; i.e., using a set percentage of available GPP, existing capital equipment and operating funds, serious implementation problems could exist at the field offices. This has been caused by the impact of having to correct OSHA, EPA, fire safety, etc., deficiencies primarily within existing stringent budgets over the past 3-year period. Further restrictions on the limited available GPP and capital equipment budgets in order to correct SNM deficiencies in today's environment of high escalation and inflation will affect the field offices' ability to meet its programmatic missions.

D. Field Office Comments on Task Force Conclusions and Recommendations

In general, the field offices concurred in the conclusions and recommendations of the task force.

LOCATIONS BY CLASSESS OF MATERIAL

Complete Weapons or Devices

Pantex
NV (NTS)
LASL

Nuclear Weapons SNM

Rocky Flats
LLL
OR/Y-12
SR
RL
SA (Area V)

Large Quantities of SNM in Potential Weapons Usable Form

Mound
Sandia (Remaing Areas)
Idaho
Portsmouth
Portions of CH/ANL
Portions of ORNL

SNM Requiring Substantial Processing

ORNL (Remaining Areas)
CH/ANL (Remaining Areas)
CH/EBR-II
CH/TREAT
CH/Brookhaven
CH/Batelle - W. Jefferson

GENERAL OBJECTIVES AND RATIONALE

The task force recognizes that, because of varying local situations, it is not possible to establish objectives having universal application. However, in general, the following corrective measures should be given the priorities indicated:

1. Perimeter Alarm Systems

   A perimeter alarm system provides early detection of intrusion by maintaining constant surveillance over a fence line. Achieving surveillance of this level could otherwise be achieved only by increasing guard patrols to a frequency which would not be economically feasible. Thus, where perimeter alarm systems can be used, guard patrols can be reduced and the guard positions used for response to alarms, improved access controls, and other essential duties.

   Several perimeter intrusion alarms have been approved by the Division of Safeguards and Security as a consequence of extensive field tests.

   When adequate lighting is provided, closed circuit television systems may also serve as perimeter alarm systems or be used in conjunction with them.

2. Guards

   Over the years, extensive economy measures have been leveled against AEC and AEC contractor guard forces with the result that guard force strength at a number of locations is clearly inadequate. Training has been reduced in frequency and scope because of the costs and manpower involved. At some locations, such as Los Alamos, special training facilities were abandoned and the instructors reassigned.

   Because of the necessity for adhering to a seniority system, younger, more physically able guards have been terminated during economy drives while older guards have been retained. This has resulted in raising the age of the average guard at an AEC facility to 47 years. Labor relations policies have impeded the application of strict physical standards, thus permitting continued employment of physically unfit guards. As a consequence, AEC and AEC contractor guard forces now range in efficiency from "poor" to "mediocre."

Guard forces require improvement through the application of physical standards, the hiring of younger, more vigorous guards to fill existing vacancies, expansion to provide more frequent patrols and to man new posts and by providing for additional and continuous training.

3. Fencing

In the early years of the AEC, a concept of "security in depth" permitted the establishment of large security areas around smaller fenced areas and buildings, thus providing "buffer zones" between the material requiring protection and the areas to which the public had access. During the economy drives of the 1950's and 1960's, the buffer zones were abolished and the smaller fenced areas, and, in some cases, the walls of the buildings containing the material were regarded as the only essential barriers. Although it was recognized at the time that this arrangement did not constitute a very satisfactory security arrangement, economic pressures and the desire of the Commission to open areas and buildings to public use prevailed.

Under new standards published in Manual Chapter 2405, areas containing special nuclear material will now require fencing. Unless such fences are erected, the application of perimeter alarm systems and adequate access controls will not be possible.

While it is recognized that a chain link fence does not constitute a very formidable barrier and that it can be breached in a matter of seconds, fences are essential to the control of traffic and to provide a recognizable limit which, if passed, constitutes an intrusion.

4. Lighting

Perimeter lighting now used at many AEC installations was installed in the late 1940's and early 1950's. Incandescent luminaries, which are now obsolete and provide only minimum illumination, were used. At that time there was no standard to be met. Since then, standards have been established, lighting technology has been improved, and existing luminaries have deteriorated with age.

Good lighting is essential to guard patrols from the standpoint of morale and efficiency.

5. Hardened Guard Stations

At the present time, there are no hardened guard stations in use at AEC facilities. With some exceptions, guard stations have traditionally been of temporary construction and designed for protection

from the weather rather than from small arms fire. At some locations, such as the Nevada Test Site and at Los Alamos, guards are in isolated positions, many miles from aid. At others, such as Pantex, guards are controlling access to sites containing complete nuclear weapons. At such locations, as well as at those where large quantities of special nuclear materials are involved, hardened guard stations should be provided.

A hardened guard station is one capable of resisting small arms fire (.38, .357 magnum) for a period long enough to permit a guard to summon aid.

Ordinarily, such guard stations will make use of bullet-resistant materials, such as polycarbonate plastics and steel sheeting.

6. Duress Alarms

A duress alarm is a relatively low-cost item intended to permit a guard to summon aid without use of a radio or telephone. Thus, if a guard is being held at gunpoint or is under attack, the single action of pushing a button or turning a switch is enough to signal a guard headquarters that the guard needs aid.

7. Night Vision Devices

Night vision devices are a relatively recent development. Those most preferred amplify ambient light, such as that emanated by stars, distant lights, and so on, permitting a guard to see into shadow areas or those which are totally unlighted. These devices are particularly useful on night patrols and provide guards with a means of assuring that an intruder is not hiding in darkened areas. They are much preferred to searchlights because the guard in using them does not reveal his position and so make himself vulnerable.

8. Communications

In general, communications at AEC facilities are adequate. Telephones and radios are ordinarily both available at AEC guard stations. If they were not, however, they would be regarded as a very high priority item.

In some instances, portable transceivers (handy-talkies) are not available to guards and should be provided.

9. Hardening of Guard Vehicles

In responding to alarms, or in making routine patrols, guards are relatively vulnerable to small arms fire. Hardening the vehicles in which they respond would provide a low-cost method of providing some additional protection.

10. New Construction

At some locations (e.g., Pantex) new construction is required to accommodate expanded guard forces and to provide more secure locations for communications centers. While there are more pressing items which should be given higher priority, the task force believes that new construction of this type is also relatively important.

TASK FORCE REPORT

Total Costs by Program

(In Thousands)

	Operating	Cap. Equip.	GPP	Line	Total
MILITARY APPLICATION					
AL	2,273	4,738	3,966	5,107	16,084
NV	500	390	200	--	1,090
OR (Y-12)	380	--	360	9,240	9,980
SAN (LLL)	1,007	36	702	--	1,745
RL	--	--	157	--	157
	4,160	5,164	5,385	14,347	29,056
PRODUCTION					
OR (PORT)	961	--	--	10,700	11,661
RL	587	46	1,812	--	2,445
SR	921	869	135	--	1,925
ID	101	205	0	--	306
	2,570	1,120	1,947	10,700	16,337
REACTOR RESEARCH & DEVELOPMENT					
CH	524	494	1,135	--	2,153
ID	101	202	83	--	386
RL	212	22	465	--	872
	837	718	1,683	--	3,238

	Operating	Cap. Equip.	GPP	Line	Total
RESEARCH					
CH (BH)	60	70	182	650	962
OR (ORNL)	700	--	--	5,900	6,600
	760	70	182	6,550	7,562
RRD					
ID	102	117	--	--	219
BIOMEDICAL AND ENVIRONMENTAL RESEARCH					
RL	59	0	--	--	59
TOTAL SNM DEFICIENCIES	8,488	7,189	9,197	31,597	56,471

NUCLEAR MATERIALS SAFEGUARDS ASSESSMENT

COST SUMMARY

	Oper.	Cap. Equip.	GPP	Line Item	Total
A. PROJECTS					
Complete Weapons	--	$ 280	$2,667	$ 1,700	$ 4,647
Nuclear Weapons SNM	--	3,288	2,714	3,967	9,969
Large Qty. of SNM	$ 242	3,057	2,499	14,227	20,025
SNM Requiring Substantial Processing	--	564	1,317	11,703	13,584
TOTAL PROJECTS	$ 242	$7,189	$9,197	$ 31,597	$ 48,498
B. GUARDS					
Complete Weapons	$ 1,687	--	--	--	$ 1,687
Nuclear Weapons SNM	3,733	--	--	--	3,733
Large Qty. of SNM	1,542	--	--	--	1,542
SNM Requiring Substantial Processing	1,284	--	--	--	1,284
TOTAL GUARDS	$ 8,246	--	--	--	$ 8,246
TOTAL	$8,488	$7,189	$9,197	$ 31,597	$56,471

TASK FORCE REPORT

NUCLEAR MATERIALS SAFEGUARDS ASSESSMENT

COMPLETE WEAPONS

(in 1,000's)

Program	Location	Item	Oper.	Cap Equip	GPP	Line Item	Total
MA	Px	Single Connecting Fence			$ 596		$ 596
MA	Px	Perimeter Alarms				$1,700	1,700
MA	Px	Harden 4 Guard Stations			337		337
MA	Px	Armor 3 Escort Vehicles		$ 30			30
MA	NV	Provide Covered Box for Transport Truck		50			50
MA	NV	Harden Portable Ground Zero Guard Station		200			200
MA	NV	Harden Permanent Guard Stations			200		200
MA	LASL	Perimeter Alarms - 410 Area			125		125
MA	LASL	Harden 410 Area Guard Stations			16		16
MA	LASL	Double Fence - Bldg 410 Area			124		124
MA	RF	Install Perimeter Alarms			625		625
MA	RF	Harden E&W Perimeter Gates			430		430
MA	SAN/LLL	Install Perimeter Alarms			214		214
		TOTAL	$0	$280	$2,667	$1,700	$4,647

Additional Guards

Location	Additional Cost (in 1,000's)	Additional Guards
Pantex	$ 675	51
Nevada	500	20
LASL	512	32
	$1,687	103

TASK FORCE REPORT

NUCLEAR MATERIALS SAFEGUARDS ASSESSMENT

NUCLEAR WEAPONS SNM

(in 1,000's)

Program	Location	Title	Oper.	Cap Equip	GPP	Line Item	Total
MA	Px	New Security Command Center				$ 907	$ 907
MA	Px	Procure 2 V-100 Armored Cars		$ 80			80
MA	Px	Armor 3 Patrol Vehicles		30			30
MA	NV	Armor Escort & Response Vehicles		50			50
MA	NV	Purchase 2 V-100 Armored Vehicles		60			60
MA	LASL	Harden Four Guard Stations			$ 64		64
MA	LASL	Perimeter Alarms (5 Areas)			500 1/		500 1/
MA	LASL	Central Station Monitor Equipment		545			545
MA	LASL	Remote Alarm Points & Improvements		76			76
MA	LASL	TA-3, Space & Door Alarms, Fence, Lights, Portal Monitors & BBldg. Mods		400	170		570
MA	LASL	TA-41, Space Alarms, Fence, Lights, Portal Monitors & Bldg. Mods		130	60		190
MA	LASL	TA-21, Space Alarms, Lights, Bldg. Mods		270	115		385
MA	LASL	TA-18, Space Alarms, Lights, Bldg. Mods		170	70		240
MA	LASL	TA-8, Space Alarms, Lights, Bldg. Mods		120	50		170
MA	LASL	TA-35, Bldg. & Vault Mods, Lights			90		90
MA	LASL	TA-16, Fence Lights			65		65
MA	LASL	Std, Equip. for TA-3, 8, 16, 18, 21, 35 and 41		307			307
MA	LASL	Harden Guard HQ & Communications Center			25		25
MA	LASL	Armor Escort & Patrol Vehicles		20			20
MA	LASL	Purchase 2 V-100 Armored Cars		80			80
MA	RF	Alarm System Mods				2,500	2,500
MA	RF	Armor Patrol Vehicles (3)		30			30
MA	RF	Purchase 2 V-100 Armored Cars		80			80
MA	SAN/LLL	Harden Guard Stations			346		346
MA	SAN/LLL	Install Additional Lighting			60		60
MA	Y-12	Intrusion Alarms				560	560
MA	Y-12	Upgrade Lighting			360 1/		360 1/
PMM	SR	Perimeter Alarms & Fences		259	40		299
PMM	SR	Perimeter Alarms & Fences		371			371
PMM	SR	Harden Guard Houses			25		25
PMM	SR	Purchase Armored Vehicles		54			54
PMM	RL	Install Double Fence (234-5Z)			236		236
PMM	RL	Harden Guard Station (234-5Z)			175		175
MA	RL	Install Intrusion Alarm (231-Z)			81		81
PMM	RL	Purchase 2 Guard Vehicles		9			9
MA	SA(AreaV)	Perimeter Alarms		147			147
MA	SA(AreaV)	Harden Gate House			182		182
		TOTAL	0	$3,288	$2,714	$3,967	$9,969

ADDITIONAL GUARDS

Location	Additional Cost (in 1,000's)	Additional Guards
Rocky Flats	$ 775	47
LLL	1,007	85
Y-12	300	20
SR	793	35
RL	858	36
SA	0	0
TOTAL	$3,733	227

1/ Field office submitted as line item; task force recommends funded as GPP.

TASK FORCE REPORT

NUCLEAR MATERIALS SAFEGUARDS ASSESSMENT

LARGE QUANTITIES OF SNM

(in 1,000's)

Program	Location	Title	Oper	Cap Equip	GPP	Item Line	Total
MA	Px	Upgrade guard equip, add'l equip.		$ 28			$ 28
MA	NV	Night Vision Devices		20			20
MA	NV	Special Guard Support Equipment		10			10
MA	LASL	Duress Alarms, Night Vision Devices & Armored Vests		20			20
MA	RF	Night Vision Devices (12)		95			95
MA	RF	Radiometric Scanner Devices, etc.		835			835
MA	LLL	Install Fencing			$ 20		20
MA	LLL	Purchase Armored Response Vehicles		32			32
MA	LLL	Install Riot Gun Holders		1/			1/
MA	LLL	Night Vision Devices		4			4
MA	LLL	Install Panic Alarms			62		62
MA	Y-12	Key Card Controls				1300 2/	1300 2/
MA	Y-12	Utility Remote Monitors				640 2/	640 2/
MA	Y-12	SNM Portal Monitors				6100 2/	6100 2/
MA	Y-12	Material & Supplies for Guards	$ 80				80
PMM	SR	Radio for Patrol Gates (330-M, etc.)		13			13
PMM	SR	Add Roving Guard Patrol	98	6			104
PMM	SR	Hire Training Specialist	30				30
PMM	SR	Purchase New Weapons		18			18
PMM	SR	Purchase Armored Vests		4			4
PMM	SR	Duress Alarms (Protected Area Gates)		28			28
PMM	SR	Equip. for Special Weapons Training		7			7
PMM	SR	Vault-Type Alarms		20			20
PMM	SR	Electronic Door Controls		10			10
PMM	SR	Night Vision Devices		30			30
PMM	SR	Duress Alarms (773-A)		7			7
PMM	SR	Radios-Patrol Gates (105-C,P,K etc.)		17			17
PMM	SR	Metal Detectors		25			25
PMM	SR	Harden Guard Stations			70		70
PMM	RL	Intrusion Alarms (234-5Z)			400		400
PMM	RL	CCTV-Fence (234-5Z)			135		135
RRD	RL	Intrusion Alarm (209-E)			26		26
PMM	RL	Harden Guard Station (200-E)			175		175
PMM	RL	Harden Guard Stations (300 Area)			173		173
RRD	RL	Harden Guard Stations (209-E)			44		44
RRD	RL	Install Double Fence (209-E)			85		85
RRD	RL	Install Intrusion Alarms (318)			9		9
PMM	RL	Harden Guard Station (200-W)			175		175
PMM	RL	Install Double Fence (224-T)			27		27
PMM	RL	Install Fence Alarms (224-T)			12		12
RRD	RL	Install Double Fence (308)			52		52
PMM	RL	Night Vision Devices (200-W)		8			8
PMM	RL	Install Doorway Monitor (224-T)			57		57

Program	Location	Title	Oper	Cap Equip	GPP	Item Line	Total
PMM	RL	Night Vision Devices (234-5Z)		8			8
MA	RL	Doorway Monitors (231-Z)			76		76
PMM	RL	Doorway Monitors (234-5Z)			209		209
PMM	RL	Doorway Monitors (2736-Z)			38		38
PMM	RL	Purchase 2 Guard Vehicles (200-E)		18			18
RRD	RL	Night Vision Devices (209-E)		4			4
RRD	RL	Doorway Monitors (209-E)			38		38
RRD	RL	Purchase 2 Vehicles (300)		9			9
RRD	RL	CCTV (209-E)			21		21
RRD	RL	Night Vision Devices (300 Area)		15			15
RRD	RL	CCTV (300 Area)			106		106
RRD	RL	Doorway Monitors (318)			19		19
RRD	RL	CCTV (308)			65		65
MA	SA	Supplemental Fencing - Area V			42		42
MA	SA	Secure Communications w/Guard HQ		42			42
MA	SA	Replace 3 Material Access Doors			70		70
MA	SA	Portal Monitors		126			126
MA	SA	CCTV		112			112
MA	SA	Space Alarms System - Area V		7			7
MA	DA	Guard Equipment		10			10
MA	DA	SN/PP Area, Perimeter Alarms, ID System, Portal Monitors, Buffer Zones, Bldgs 37 & 50, Buffer Zones		305			305
MA	DA	T Bldg., Perimeter Alarm, Alarm System, Portal Monitors, Buffer Zone		425			425
MA	DA	R and SW Bldgs., Alarm System, ID System		135			135
MA	DA	Upgrade Communications Center			210		210
MA	DA	Two V-100 Armored Cars from DOD		80			80
RRD	ID	Install Perimeter Alarms		170	83		253
RRD	ID	Purchase 2 Patrol Vehicles		8			8
RRD	ID	Purchase Transceivers		10			10
PMM	ID	Install Space Alarms		3			3
RRD/PMM	ID	CCTV at Material Access Areas		24			24
RRD/PMM	ID	Portal Monitors		299			333
RRD/PMM	ID	Night Vision Devices	34	10			10
PMM	PORT	Perimeter Alarms				660 2/	660 2/
PMM	PORT	Purchase 2 Van Trucks				76 2/	76 2/
PMM	PORT	Security Fences				597 2/	597 2/
PMM	PORT	Lighting				616 2/	616 2/
PMM	PORT	Bldg Mods				1,218 2/	1,218 2/
PMM	PORT	Construct Vaults				630 2/	630 2/
PMM	PORT	Key Card Controls				70 2/	70 2/
PMM	PORT	TV Monitors				1,200 2/	1,200 2/
PMM	PORT	SNM Monitors				1,120 2/	1,120 2/
		TOTAL	$242	$3,057	$2,499	14,227	$20,025

ADDITIONAL GUARDS

Location	Additional Cost (in 1,000's)	Additional Guards
Dayton	$ 311	22
Idaho	270	15
Portsmouth	961	40
TOTAL	$1,542	77

1/ Minor amount - $370.00

2/ OR submitted as line items; could be broken down so that equipment & GPP funds could be used.

TASK FORCE REPORT

NUCLEAR MATERIALS SAFEGUARDS ASSESSMENT

SNM REQUIRING SUBSTANTIAL PROCESSING

(in 1,000's)

(NOTE: Items Listed Are Not in Priority Order)

Program	Location	Item	Oper.	Cap Equip	GPP	Line Item	Total
MA	OR/Y-12	Bldg Modif-Guard Changehouse				$ 640	$ 640
PMM	PORT	New Bldg - Storage				4,513	4,513
R	ORNL	Perimeter Alarms				441	441
R	ORNL	Fencing				407	407
R	ORNL	Lighting				140	140
R	ORNL	Bldg Modif-ind. vault storage and doorway monitors				3,069	3,069
R	ORNL	TV Monitors				1,843	1,843
RRD	CH/ANL	Purchase radio		$ 2			2
RRD	CH/ANL	Guard Post (331A)			$ 47		47
RRD	CH/ANL	Install Fence, Lts, Gates (331A)			36		36
RRD	CH/ANL	Guard Shelter (331A)			4		4
RRD	CH/ANL	Key Card System (331A)			2		2
RRD	CH/ANL	Night Vision Devices (331A)		2			2
RRD	CH/ANL	CCTV (331A)			19		19
RRD	CH/ANL	Space Alarms (331A)			11		11
RRD	CH/ANL	Portal Monitors (331A)		29			29
RRD	CH/ANL	Portable Monitors (331A)		16			16
RRD	CH/ANL	Guard Post (316)			125		125
RRD	CH/ANL	Fences, Lts, Gates (350)			42		42
RRD	CH/ANL	Roadwork (350)			11		11
RRD	CH/ANL	Night Vision Devices (350)		2			2
RRD	CH/ANL	CCTV and Space Alarms (316)			24		24
RRD	CH/ANL	Lock System Revision (350)			9		9
RRD	CH/ANL	Key Card Control (350)			11		11
RRD	CH/ANL	CCTV and Space Alarms (350)			32		32
RRD	CH/ANL	Install Radio (212)		2			2
RRD	CH/ANL	Key Card Controls (212)			4		4
RRD	CH/ANL	Fences, Lts, Gates (212)			29		29
RRD	CH/ANL	Guard Post (212)			37		37
RRD	CH/ANL	Grilles, Roof, Fence (212)			12		12
RRD	CH/ANL	CCTV and Space Alarms (212)			71		71
RRD	CH/EBR-II	Facility Alarms		39			39
RRD	CH/EBR-II	Fence and Lighting			172		172
RRD	CH/EBR-II	Guard Post			187		187
RRD	CH/EBR-II	Facility Posts			12		12
RRD	CH/EBR-II	Commun Equip			31		31
RRD	CH/EBR-II	Utilities, Site Work			42		42
RRD	CH/EBR-II	Interlocking System			42		42
RRD	CH/EBR-II	Night Vision Devices		17			17
RRD	CH/EBR-II	CCTV System			83		83
RRD	CH/EBR-II	Portal Monitors		305			305
RRD	CH/EBR-II	Vehicle Monitors		52			52
RRD	CH/EBR-II	Portable Monitors		28			28
RRD	CH/TREAT	Fence, Ltg, Gates			30		30
RRD	CH/TREAT	Alarms			6		6
RRD	CH/TREAT	CCTV			4		4
R	CH/BH	SNM Vault (HFBR)			62		62
R	CH/BH	Harden Police Comm. Ctr			75		75
R	CH/BH	CCTV		25			25
R	CH/BH	Update Freq. Equip		30			30
R	CH/BH	Establish HFBR, PA, and Guard Post			45		45
R	CH/BH	CCTV (Vaults - Guard Post)		15			15
R	CH/BH	Perimeter Fence				650	650
		TOTAL	$ 0	564	1,317	11,703	13,584

Additional Guards

Location	Additional Cost (in 1,000's)	Additional Guards
ORNL	$ 700	40
ANL	300	20
CH (EBR II)	210	15
CH (TREAT)	14	1
BH	60	4
TOTAL	$1,284	80

Exhibit 3

4/2/75

SAFEGUARDS FY 1976 AMENDMENT

($ Thousands)

Safeguards Categories	Included in FY 1976 Cong. Budget	Safeguards FY 1976 AMENDMENT Operating	Capital Equipment	Construction	AMENDMENT TOTAL
Research and Development	$ 24,588	$ 9,900	$ -	$ -	$ 9,900
Communications	371	-	-	-	-
Transportation	21,463	-	-	-	-
Plant Protection	48,802	8,488	7,189	40,794	56,471
Materials Control & Accountability	18,328	3,603	3,345	990	7,938
Detection and Response Capability	2,115	2,165	1,370	-	3,535
Selected Resources	5,995	-	-	-	-
	$121,662	$24,156	$11,904	$41,784	$77,844

UPDATED PROGRAM PLAN FOR ERDA SAFEGUARDS ACTIVITIES

I. OBJECTIVES

The general objective of safeguards is to achieve a level of protection against willful actions involving the possession of nuclear materials or the sabotage of nuclear facilities to ensure against a significant increase in the risk of death, injury, or property damage to the public from other causes beyond the control of the individual. The general objective can be met by: (a) reducing the frequency of attempts to produce these societal consequences; (b) reducing the likelihood of adversary success when an attempt is made; and (c) reducing the consequences of a successful act.

The adversary actions leading to societal consequences necessarily take place in a sequence, which will usually consist of a preparatory phase, an access and acquisition phase, and, in the case of theft, a utilization phase. With regard to adversary actions involving interaction with ERDA nuclear facilities and activities, i.e., the access and acquisition phase, ERDA has the primary role of establishing policy, procedures, and of assuring adequate implementation. ERDA has only an ancillary role during the preparatory phase of an adversary action sequence and a supportive role during response and recovery operations by law enforcement agencies following a theft. However, ERDA can and will take the initiative in such areas as proposing relevant legislation and assuring effective coordination among government agencies having safeguards-related functions in those areas.

The figure on page 3 is a schematic of six elements. It shows the relationship of the four major functional areas of the safeguards program (i.e., system evaluation and policy development (III), ERDA safeguards approval and inspection (IV), facility and transport safeguards implementation (V), and interagency activities (VI)) and the associated research and development program (II). The following five parts of this plan describing the safeguards program correspond to these elements.

II. R&D PROGRAM

The R&D program described below has a total FY 1976 Congressional Budget of $24.6 million. An Amendment to the FY 1976 budget is being proposed to provide an additional $9.9 million to permit the initiation during FY 1976 of efforts described below.

A. Improvement of Threat Definition is directed toward an understanding of the motivation, resources and methods of the potential adversary and the expected frequency of attempts at SNM theft or sabotage.

Current and Planned Actions:

1. Identify and characterize the nature and resources of those elements of society for whom attempts to create societal consequences based on nuclear events would appear to be an advantageous method of achieving their ends. (FY-1977)

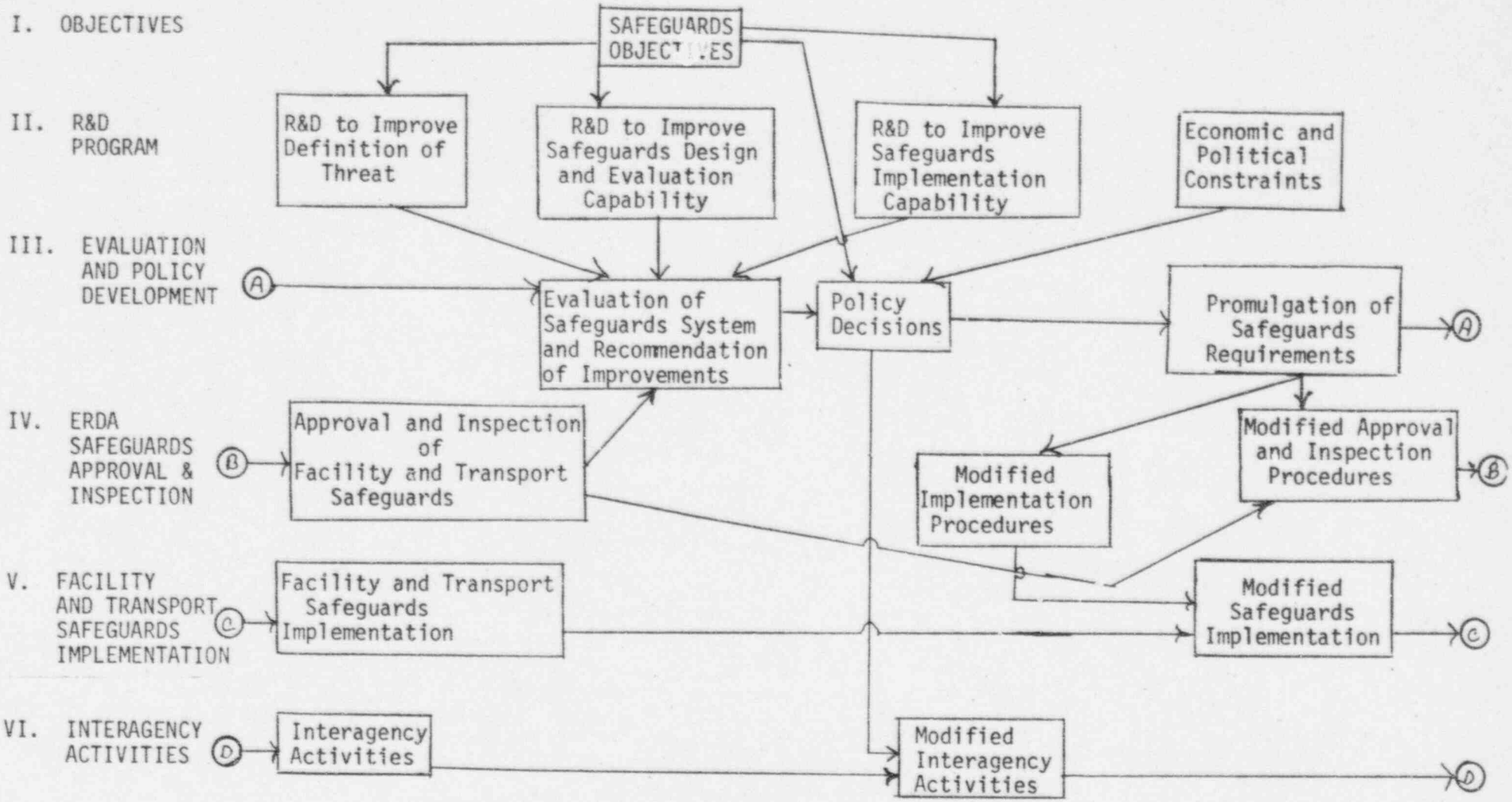
2. Provide a basis for ordering or ranking the most likely targets and modes of attack in terms that would enhance safeguards design and evaluation. (FY 1977-78)

B. Improvement of System Design and Evaluation Procedure is directed at an improvement in the methodology for systematic design and evaluation of the safeguards system. Based on a study entitled "The Societal Risk Approach to Safeguards Design and Evaluation," a preliminary structure for design and evaluation has been defined. The structure directly relates the safeguards mechanisms to the adversary actions to be countered and permits the level of protection to be graded in terms of both the level of consequences that might arise from adversary actions and the likelihood of their occurrence. The evaluation of effectiveness includes the questions of whether all relevant adversary actions are covered as well as whether the level of protection is adequate. The full development of this approach is a long-term effort requiring significant resources.

Current and Planned Actions:

1. Define the scope of safeguards through the identification of the events of concern and provide a basis for priority of action by ordering the events according to the level of estimated consequences to society. This will include consideration of all events of concern, including dispersal of small quantitites of plutonium and other radioactive materials, and may require reconsideration of the trigger quantities now used to determine the requirement for protection (e.g., 2 kgs. plutonium). (FY-1976)

SAFEGUARDS PROGRAM SCHEMATIC



2. Identify the generic adversary action sequences associated with each event and order them according to the relative difficulty of perpetration as an indicator of the relative likelihood of attempt. (FY-1976)

3. Develop adversary action decision trees in sufficient detail to permit assessment of the effect of the protective mechanisms on each action sequence on a facility-by-facility basis. (FY 1976-78)

4. Evaluate the effectiveness of the safeguards mechanisms as applied to each of the adversary action sequences for various combinations of the adversary attributes which affect the capability to perpetrate the adversary action sequences. The total set of combinations should reflect the credible range of possibilities for each of the adversary action sequences. (FY 1976-78)

C. Improvement of capability for implementation is directed at developing or selecting methods, techniques, and devices for:

- facility and transport protection against unauthorized access to, or unauthorized removal of SNM from a fixed-site, building, or area constituting a facility, or unauthorized access to or control over SNM during any phase of transportation;

- internal control and accounting to protect against activities on-site or in connection with transport, that are directed at sabotage or diversion of SNM; and

- limiting or reducing the consequences of events caused by successful adversary actions.

Current and Planned Actions:

1. Develop evaluation procedures for assessing perimeter and internal control systems. (FY 1975-77)

2. Develop, test, prepare specifications and demonstrate improved physical protection equipment. (FY 1976-78)

3. Develop, test, and demonstrate improved measurement capabilities. (FY 1975-78)

4. Develop, test, and prepare specifications for personnel, package, and vehicle portal monitoring devices. (FY-1976)

5. Complete the technical specifications for a decision structure and associated information flows relating to the operation of the safeguards system. (FY 1976-77)

6. Develop improved inspection procedures and guides which permit more efficient and effective inspection efforts. (FY 1976-77)

III. EVALUATION AND POLICY DEVELOPMENT

A. Evaluation and Development of the ERDA policy and procedural guidelines in light of the safeguards sub-objectives and the full range of adversary actions identified in the "Societal Risk Approach to Safeguards Design and Evaluation". The scheduling will depend on the availability of adequate staff.

Current and Planned Actions:

1. Assess the coverage of current ERDA policy and procedural guidelines in effect to counter adversary actions by force, stealth, and guile to gain access to, divert, sabotage, or remove special nuclear material at facilities or in transport. (FY-1976)

2. Assess the coverage of the ERDA interagency arrangements relating to the deterrence and detection of adversary action during the preparatory phase of the sequence and the response and recovery activity that would follow a successful theft. (FY-1976)

3. Develop and promulgate revised policy and procedural guidelines to correct any deficiencies and to relate the guidelines to safeguards sub-objectives. A secondary purpose of the revision will be to segregate guidelines for special nuclear material physical protection from those concerned with protection of classified information or valuable property. (FY 1976-78)

B. Develop a public information policy regarding the disclosure and non-disclosure of information that affects the societal risk arising from sabotage or theft of SNM.

Current and Planned Actions:

1. A National Security Council study on the "National Security Aspects of Releasing Safeguards Procedures and Data on Nuclear Materials," is scheduled to be complete and forwarded to the President for his consideration by March 28, 1975.

2. A study of Public Information policy to establish the best way to enhance public confidence in safeguards and thereby to diminish the likelihood of attempts. (FY-1976)

3. Establish policy and procedural guidelines to implement the approved recommendations of the above studies. (FY 1976-77)

IV. ERDA SAFEGUARDS APPROVAL AND INSPECTION

These operations are mainly conducted by ERDA field offices; however, some appraisals and inspections are conducted by the ERDA Headquarters Division of Safeguards and Security. They are directed at assuring that domestic facility plans and procedures are appropriate and that they are implemented effectively. ERDA facilities subject to safeguards and security are inspected at least annually by ERDA personnel. In addition, nine ERDA field offices and ten area offices are audited, appraised, and inspected by the Headquarters Division of Safeguards and Security.

The Headquarters inspection effort has been limited to conducting inspections of only select domestic installations and field offices, because of severe shortages of staff and travel funds. One alternative under consideration to provide for more effective inspections and broader coverage is to establish regional inspection activities under Headquarters direction utilizing the field offices survey staffs. This arrangement should offer more flexibility of operation and reduce the Headquarters inspection staff.

Current and Planned Actions:

1. Conduct inspections.

2. Review inspection procedures to assure conformance with revised policy and procedural guidelines.

3. Consider establishment of regional inspection activities to provide more effective and broader coverage of inspections.

V. FACILITY AND TRANSPORT SAFEGUARDS IMPLEMENTATION

This involves the actual safeguards operations carried out by the various ERDA program divisions and contractors in accordance with ERDA policy and procedural guidelines. When new guidelines or requirements are issued, plans or procedures must be developed by the contractor and be submitted to ERDA field offices for approval. If the new requirements involve significant resources, there will be an interval between issuance and implementation while plans and budgets are prepared and approved by the ERDA field offices and program divisions. This program function includes both physical protection and internal control and accounting subsystems.

Physical protection techniques are directed to the protection against adversary actions (whether by force, stealth, or guile) involving: (a) unauthorized access to, or removal of designated material from a fixed-site, building, or area constituting a facility; or (b) unauthorized access to or control over designated material during any phase of transportation not within a protected facility.

Current and Planned Actions:

1. Expand guard forces and improve their capability to respond to emergencies by use of electronic and mechanical guard supplements and aids, including extensive installations of electronic intrusion sensors and doorway monitors for detecting unauthorized removal of SNM. (FY-1976)

2. Procure and put into service specially designed vehicles and communications equipment and employ armed escorts for the transport of significant quantities of Government-owned SNM. (FY 1976-77)

Internal control and accounting subsystems and techniques are directed to generation, reporting, and analysis of information concerning the nature, amount, and location of material to be protected; to rapid detection, and localization of losses or diversion, and to credible assurance that control is maintained.

Current and Planned Actions:

1. Improvement, on a plant-by-plant basis, of systems and components to provide for: (a) more completely measured, 30-day physical inventories; (b) improved measurements between material balance areas; (c) appropriate use of seals; and (d) limits of error analysis for material balances in process areas.

Funding required for application of physical protection is reflected in Exhibit 1. With respect to implementation of internal control and accounting techniques, Program Division budgets total $19.3 million for this effort in the President's Budget for FY 1976. A total of $7.9 million is proposed as an Amendment to the President's Budget to Congress for increasing FY 1976 effort in the foregoing area of internal control and accounting.

VI. INTERAGENCY ACTIVITIES

ERDA activities in this area include liaison and consultation with law enforcement and intelligence agencies at the national and local levels. ERDA will provide technical assistance in the development of plans and procedures for deterrence, interdiction, and pursuit and recovery where nuclear materials are involved. Also, ERDA technical capabilities will be established and maintained as required to support interagency emergency preparedness plans covering nuclear sabotage, dispersal, or explosion and to support any search and recovery procedures conducted by other agencies.

Current and Planned Actions:

1. Collect from and correlate with other Federal Agencies and Interpol information for use in assessing actual or potential domestic or foreign adversary capability or activity.

2. Initiate interagency efforts to clarify the areas of responsibility of government agencies to ensure an integrated reaction to nuclear theft or threats prior to the occurrence of an international nuclear event.

3. Participate as a working group member in the development by the Office of Preparedness, of a Federal Response Plan for Nuclear Emergencies (FRPNE), which would define the Government's reaction and areas of responsibility in the case of an international nuclear event as well as nuclear accident.

4. Provide to other Federal agencies technical advice, assistance, and support with detection equipment for recovery of SNM and provide for appropriate training of other Agency's staff as new techniques are developed.

[redacted] Attachment 3

June 4, 1975

Mr. H. E. Lyon, Director
Division of Safeguards and Security
Energy Research & Development Administration
Washington, D. C. 20545

Dear Mr. Lyon:

We have reviewed the draft "Annual Report to the National Security Council on the Status of Domestic Safeguards" enclosed with the memorandum of May 20, 1975, from Mr. Robert E. Tharp, and offer the following suggestions for revision of the draft.

We believe that in the transmittal letter the second sentence in the second paragraph should be changed to read as follows: "This report has been coordinated with the Nuclear Regulatory Commission." We also recommend deleting the last sentence of the second paragraph which indicates a separate report may be submitted by the Nuclear Regulatory Commission.

On page 18 of the draft report, we strongly disagree with the suggestion that "... the National Security Council seek Congressional support for directing the Nuclear Regulatory Commission to accept the major features of ERDA-developed safeguards and security measures and principles for new reactor concepts and related fuel cycles." We feel that this proposal is definitely contrary to the intent of the Congress that the Nuclear Regulatory Commission function as an independent regulatory agency. As an independent agency, the Nuclear Regulatory Commission provides a much needed "check and balance" function which can definitely strengthen our Nation's safeguards system by developing regulations independent of the research and development phases. Accordingly, if the suggestion is included, it should be made clear that (1) the suggestion expresses only an ERDA view and (2) the Nuclear Regulatory Commission does not agree with that view.

The rationale for classifying the report is not clear to us. We feel consideration should be given to publishing the report as unclassified.

[redacted]

[redacted]

Mr. H. E. Lyon

Additional comments are set forth in the enclosure to this letter.

We would expect a final draft to be returned for Commission review.

Sincerely,

/s/ Gossick

Lee V. Gossick
Executive Director for Operations

Enclosure:
As stated

DISTRIBUTION:
CBSawyer
TCarter
RGPage
KRChapman
LVGossick
ELD
NMSS r/f
SG r/f
SG Subject
Central

[redacted]

See concurrences on attached yellow copy.

OFFICE ▶	SG	SG	SG	NMSS	ELD	EDO
SURNAME ▶	CBSawyer/maf	TCarter	RGPage	KRChapman	RLFonner	LVGossick
DATE ▶	6/3/75	6/3/75	6/3/75	6/ /75	6/3/75	6/ /75

Enclosure 1

Page 4, top paragraph:

Add the thought that (1) the NRC is conducting a security agency study as mandated by the Energy Reorganization Act and (2) the types of questions raised in this paragraph are being considered as part of that study.

Page 5, bottom paragraph:

As an editorial comment, it appears that the reference to Exhibit 2 may be ambiguous; i.e., Exhibit 2 to this report vis-a-vis Exhibit 2 to the Lynn letter.

Page 8, item 2:

This item should state that similar links will be established between the FBI and the NRC and between the CIA and the NRC.

Page 8:

In the paragraph preceding the heading "Improvements in Safeguards" add a sentence such as the following:

> "The NRC prepared a detailed description of significant events in the NRC safeguards program for special nuclear material and related facilities for the year 1974 which is contained in Enclosure 2."

The above referenced enclosure was transmitted to the Office of Safeguards and Security on March 5, 1975. An additional copy is enclosed as Enclosure 2 to this letter.

Page 9, bottom line:

Change "Commission" to "Atomic Energy Commission."

Page 10, line 5:

Change the phrase "... five kilograms of contained fissile material" to "... 2 kilograms of Pu as U-233 or 5 kilograms of U-235 contained in uranium enriched to 20% or more in the U-235 isotope."

Page 10, bottom paragraph:

Add the thoughts (1) that the purpose of the entrance search is to deny introduction of firearms, explosives, incendiary devices, and other things which could be used to sabotage the facility or aid in the theft of

SNM; (2) that the purpose of the exit search is to deny exit of unauthorized SNM; and (3) that, as will be noted subsequently, the NRC is developing a clearance program for access to unclassified SNM.

Page 11, last sentence:

Make clear that the purpose of the October 1974 amendments was to further strengthen the regulations for the control and accounting of SNM.

Page 12, first sentence:

Consider revising the sentence to read:

> "The protection measures which were discussed in Section 3 above and which are intended to deny forced access also protect against forced removal."

Page 12, third paragraph:

Add the following statement:

> "The NRC is commencing a concerted effort to develop stronger liaison with the FBI and other appropriate agencies in an attempt to develop pertinent contingency plans designed to guide government action in the event of special nuclear material removal and/or emergencies at licensee facilities."

Page 13, last paragraph:

Substitute the following material for this paragraph:

> "Legal authority has been obtained for requiring that access to SNM or to SNM accountability records be limited to persons with clearances (PL 93-377). Methods of implementation are under study. Duplicate record systems, local and central, and shipper-receiver measurements also reduce the risk of deceit. Requirements for control and accounting of SNM were revised to provide greater sensitivity and timeliness for detecting theft or diversion. NRC initiated and is developing a program whose goal is the control of and accounting for material on a real-time basis. NRC also is undertaking the application of diversion-path analysis in order to (a) identify weaknesses in material control systems and (b) develop methods for detecting possible or attempted diversion of special nuclear material."

Page 14, second paragraph:

Revise the first sentence to read as follows:

"During 1974, new rules for protection of SNM in transit were applied to all licensees and transportation companies (10 licensees and 5 transportation companies) which are authorized to protect transport shipments of more than 2000 grams of Pu or U-233 or more than 5000 grams of U-235 contained in uranium enriched to 20% or more in the U-235 isotope."

Page 15, Section 8 and 9:

Add the following at the end of this paragraph:

"The NRC plans to establish similar liaison."

Enclosure 2

Frank Arsenault
ERDA - Safeguards and Security

INFORMATION FOR NSSM-254 - ANNUAL REPORT ON STATUS OF SAFEGUARDS PROGRAM

Enclosed for your use in preparing the response to NSSM 254 is a description of the significant events in the safeguards program for licensed special nuclear material and related facilities for the year 1974.

R. G. Page

Enclosure
As stated.

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Enclosure

SIGNIFICANT ORGANIZATIONAL CHANGES

The Energy Reorganization Act of 1974 (Public Law 93-438), which established the Nuclear Regulatory Commission, also established in the Commission an Office of Nuclear Material Safety and Safeguards under the direction of a Director of Nuclear Material Safety and Safeguards.

The Director of Nuclear Material Safety and Safeguards is to perform such functions as the Commission shall delegate including:

(1) Principal licensing and regulation involving all facilities and materials, licensed under the Atomic Energy Act of 1954, as amended, associated with the processing, transport, and handling of nuclear materials, including the provision and maintenance of safeguards against threats, thefts, and sabotage of such licensed facilities, and materials.

(2) Review safety and safeguards of all such facilities and materials licensed under the Atomic Energy Act of 1954, as amended, and such review shall include, but not be limited to:

(A) monitoring, testing, and recommending upgrading of internal accounting systems for special nuclear and other nuclear materials licensed under the Atomic Energy Act of 1954, as amended;

(B) developing, in consultation and coordination with the Administration, contingency plans for dealing with threats, thefts, and sabotage relating to special nuclear materials, high-level radioactive wastes and nuclear facilities resulting from all activities licensed under the Atomic Energy Act of 1954, as amended;

(C) assessing the need for, and the feasibility of, establishing a security agency within the office for the performance of the safeguards functions, and a report with recommendations on this matter shall be prepared within one year of the effective date of this Act and promptly transmitted to the Congress by the Commission.

(3) Recommending research to enable the Commission to more effectively perform its functions.

UPGRADING OF PROTECTION AT FIXED SITES

In November, 1973, the Commission published comprehensive amendments to its regulations to strengthen the protection of nuclear plants against industrial sabotage and to strengthen the protection of SNM against theft. During 1974, the protection measures called for by these requirements were implemented at 23 licensee sites.

Under the requirements, each person who is licensed to possess or who applies for a license to possess 5,000 grams or more of SNM as computed by the formula:

grams = grams (U-235) + 2.5 [grams (Pu) + grams (U-233)]

where grams (U-235) means grams of U-235 contained in uranium enriched to 20% or more in the U-235 isotope

is required to comply with detailed physical protection requirements as discussed below and to prepare and submit a physical protection plan to the NRC for approval. The protection plan must contain two parts. Part I must address vital equipment, vital areas, and isolation zones and must demonstrate how the licensee will meet applicable requirements. Part II must list the tests, inspections, and other means for demonstrating compliance with the requirements. The licensee is not permitted to make any change which would decrease the effectiveness of his physical protection plan without prior approval of the NRC.

A physical protection plan must clearly demonstrate that the applicant will be able to comply with the following requirements:

- The licensee must maintain a physical security organization, including armed guards to protect his facility against sabotage and the SNM in his possession against theft and diversion. At least one supervisor of the security organization must be onsite at all times. The licensee must establish, maintain, and follow written security procedures which document the structure of the security organization and which detail the duties of guards, watchmen, and other individuals responsible for security. All guards and watchmen must be properly trained, equipped and qualified.

- Any equipment, system, device or material whose failure, destruction or release directly or indirectly endanger public health and safety must be located within a separate structure or barrier designated as a vital area. In addition, SNM must be stored and processed within a controlled area designated as a material access area. All vital areas and material access areas must be located within a larger protected area which is surrounded by a physical barrier. An isolation zone is required on both sides of the outer physical barrier, and it must be kept clear of obstructions, illuminated, and monitored to detect the presence of individuals or vehicles attempting to gain entry

to the protected area so as to allow response by the licensee's security force at the time of penetration into the protected area.

- Personnel and vehicle access into a protected area, material access area or vital area must be controlled. A picture badge identification system must be used for employees. Visitors must be registered and escorted, except that an individual who requires frequent and extended access to a protected or vital area need not be escorted if he is provided with a picture badge which designates the area to which access is authorized. Individuals and packages entering the protected area are required to be searched. Admittance to a vital area and material access area must be controlled, and access must be limited to those persons who require such access to perform their duties. Methods to observe individuals within a material access area to assure that SNM is not being diverted must be provided and used on a continuing basis. All individuals, packages, or vehicles are searched for concealed SNM before exiting from a material access area. Keys, locks, combinations and related equipment are required to be controlled to minimize the possibility of compromise.

- All emergency exits in the protected area, vital areas, and material access areas must be alarmed against intrusion. Each unoccupied material access area must be locked and alarmed. All alarms must annunciate in a continuously manned central alarm station located within the protected area and in at least one other continuously manned station. All alarms must be selfchecking and tamper-indicating and tested for operability and required functional performance at specified intervals not to exceed seven days.

- Each guard or watchman on duty must be capable of maintaining continuous communications with an individual in a continuously manned central alarm station within the protected area, who is capable of calling for assistance from other guards and from local law enforcement authorities. To provide the capability of continuous communication with local law enforcement authorities, two-way radio voice communications must be established in addition to conventional telephone service. All communications equipment must remain operable by means of independent power sources in the event of loss of primary power, and must be tested for operability and performance not less frequently than once at the beginning of each security personnel work shift.

- Licensees must establish liaison with local law enforcement authorities. In developing security plans, licensees must take into account the probable size and response time of the local law enforcement assistance. The security force must be prepared to take immediate action to neutralize threats to the facility by appropriate direct action and by calling for assistance from local law enforcement authorities.

To aid licensees in carrying out the new protection requirements, the Commission issued a number of new Regulatory Guides which set forth acceptable ways for complying with selected requirements. These are listed in Appendix A.

Also during 1974, persons operating nuclear power reactors were required to submit physical security plans to protect against industrial shortage. Protection plans for 52 nuclear power reactor units were reviewed and approved. Guidance as to the physical protection criteria generally acceptable for the protection of nuclear power reactors against an act of industrial sabotage is provided by Regulatory Guide 1.17 "Protection of Nuclear Power Plants Against Sabotage" which references ANSI Standard N18.17 "Industrial Security of Nuclear Power Plants." The level of security provided is similar to that discussed above for the protection of SNM.

In November, 1974, the Commission published new proposed amendments which would establish new specific requirements for nuclear power reactor licensees to establish a physical security organization to provide access control to and within the nuclear power reactor using qualified and trained guards, and to establish other physical security measures including communications, liaison with local law enforcement authority, and visitor restrictions for non-employees.

UPGRADING OF MATERIAL CONTROL AND ACCOUNTING MEASURES

Commission requirements for the control and accounting of special nuclear material at licensed plants were revised in November, 1973, to provide greater sensitivity and timliness for detecting the theft or diversion of material. Quality specifications were prescribed for performing plant material balances on the basis of measurements.

During 1974, the following material control and accounting requirements were generally applied to 30 facilities which were authorized to possess more than one effective kilogram*of special nuclear material in unsealed form:

*Effective kilogram of special nuclear material means: (1) For plutonium and uranium -233 their weight in kilograms; (2) For uranium with an enrichment in the isotope U-235 of 0.01 (1%) or above, its element weight in kilograms multiplied by the square of its enrichment expressed as a decimal weight fraction; and (3) For uranium with an enrichment in the isotope U-235 below 0.01 (1%), by its element weight in kilograms multiplied by 0.0001.

- The licensee must maintain and follow written material control and accounting procedures.

- Records must be kept showing the receipt, inventory (including location), disposal, acquisition, import, export, and transfer of all special nuclear material in each licensee's possession, including records of the quantities of material added to or removed from process. Physical inventory and material balance records must be maintained for a period of five years.

- All transfers of special nuclear material between material balance areas must be documented to show the identity and quantity of material. Means must be provided for the control and accounting of internal transfer documents and for obtaining authorized signatures on each document.

- The licensee must uniquely identify items or containers containing special nuclear material in process.

- The licensee must tamper-safe containers or vaults containing special nuclear material not in process and control access to the devices and records associated with their application. Tamper-safing may be utilized to assure the validity of material measurements performed prior to the time of physical inventory.

- Provisions must be made for accurate cutoff procedures, verification of the integrity of the tamper-safing devices used for securing previously measured material, verification by remeasurement of the quantities of material previously measured but not tamper-safed, and for the accurate listing of the inventory. In addition to the general inventory procedures, specific inventory instructions must be prepared for each inventory.

- All quantities of material on inventory must be based on measurements.

- The licensee must conduct physical inventories bimonthly for plutonium and uranium 233, and uranium enriched 20 percent or more in U-235, except for plutonium containing 80 percent or more by weight of the isotope Pu-238 and plutonium and uranium held in the inaccessible portion of an irradiated fuel reprocessing plant. The licensee must conduct physical inventories for uranium enriched less than 20 percent in the

isotope U-235, and those materials exempted from the bimonthly inventories at least every six months.

- Within 30 days after the start of each physical inventory, the licensee must calculate the material unaccounted for (MUF) and its associated limit of error, reconcile and adjust the accounting records to the results of the physical inventory, and complete the material balance records for each material balance.

- The licensee must maintain a system of control and accounting such that the limits of error for any MUF do not exceed threshhold quantities of 200 grams for plutonium or uranium -233, 300 grams for uranium or the isotope uranium -235 contained in high enriched uranium, or 9,000 grams for uranium -235 contained in low enriched uranium, or 0.5 percent of additions to or removals from material in process, whichever is greater, except for a reprocessing plant where the uncertainty for plutonium and uranium may be 1.0 percent and 0.7 percent, respectively. In accordance with the provisions of the regulations, two plants have been allowed higher limits. Each of these has initiated programs to achieve improvements in his material control system.

In October, 1974, the Commission issued amendments to its regulations which specify fundamental nuclear material controls required to be established, maintained, and followed by licensees authorized to possess at any one time and location more than one effective kilogram of special nuclear material in unsealed form.

These amendments provide the basic criteria for detailed licensee material control and accounting systems. The criteria, in turn, provide the basis for the eventual development of material control and accounting systems utilizing advanced technology such as nondestructive analysis and automatic data processing to provide real-time accurate control of and accounting for special nuclear material.

Also in October, 1974, the Commission published proposed regulations to strengthen the materials control and accounting requirements for special nuclear material in the interest of the common defense and security. Such amendments would provide greater assurance that material balances are based upon current, high quality measurement data, so that a loss of material may be distinguished from measurement uncertainty.

Under the proposed amendments each licensee who is authorized to possess, at any one time and place, a quantity of certain special nuclear material exceeding one effective kilogram in unsealed form would be required to establish and maintain a measurement control program covering all of the

components of measurements used for materials control and accounting purposes. The program would include organizational controls for the management of measurement quality, training and performance qualification requirements, a standards and calibration system, a quality testing system for the determination and the control of systematic and random errors, a records evaluation system for the collection and statistical analysis of the data, and a system of management audits and reviews. If adopted by the Commission the proposed amendments would give licensees three months to submit plans for the measurement control programs. The licensees would be required to follow the plans submitted six months after the deadline date for submission or thirty days after Commission approval whichever is later.

To aid licensees in carrying out the new material control and accounting requirements, the Commission issued a number of new Regulatory Guides in 1974 which set forth acceptable ways for complying with selected requirements. These are listed in Appendix B.

UPGRADING OF PROTECTION OF SNM DURING TRANSPORT

During 1974 the following new rules for the protection of SNM in transit were applied to 10 licensees and 5 transportation companies.

Each person who is licensed or who applies for a license to possess more than 5000 grams of special nuclear material as computed by the formula given above, except SNM contained in irradiated fuel, must submit a plan to the NRC for review and approval outlining the methods to be used for the protection of the SNM while in transit. The licensee is not permitted to make any change which would decrease the effectiveness of his transportation security plan without prior approval of the NRC. The plan must demonstrate the means to be used in meeting the following requirements:

- If a common or contract carrier is used, the SNM must be transported under the established procedures of the carrier which provide a system for the physical protection of valuable material in transit and require a hand-to-hand receipt at origin and destination and at all points in route where there is a transfer of custody. Transit times of all shipments must be minimized, and routes must be selected to avoid areas of natural disaster or civil disorders. SNM must be shipped in containers which are sealed by tamper-indicating type seals. The outer container or vehicle is required to be locked and sealed. No container weighing 500 pounds or less may be shipped on open vehicles, such as open trucks or railway flatcars.

- All shipments by road must be made without any scheduled intermediate stops to transfer SNM or other cargo between the point of origin and destination. All motor vehicles are required to be equipped with a radiotelephone. Calls must be made at predetermined intervals normally not to exceed two hours; and if calls are not received when planned, the licensee or his agent must immediately notify an appropriate law enforcement authority and the NRC. Shipments by road must be accompanied by at least two people in the transport vehicle. If the transport vehicle is not specially designed with penetration-resistant and immobilization features, the vehicle is required to be protected by an armed escort consisting of at least two guards in a separate escort vehicle. In addition, transport vehicles are required to be marked on top, sides, and rear with identifying letters or numbers.

- Large shipments of SNM are prohibited on passenger aircraft. Shipments on cargo aircraft are required to be arranged so as to minimize the number of scheduled transfers; guards must be present during transfer and at all scheduled stops.

  Rail shipments must be escorted by two armed guards in the shipment car or in an escort car. Continuous onboard radiotelephone communications capability must be provided with conventional telephone backup. Periodic calls are required to the licensee or his agent.

- Shipments by sea must be made on vessels making the minimum ports of call. Transfer at domestic ports from other modes of transportation must be monitored by a guard. Shipments must be placed in a secure compartment which is locked and sealed. Export shipments must be escorted by an authorized individual, who may be a crew member from the last port in the U. S., until it is unloaded in a foreign port. Ship-to-shore communications must be made every 24 hours to relay position information and the status of the shipment as determined by daily inspections.

- A licensee who makes a shipment must notify the consignee of the shipment schedule and details, including the estimated time of arrival of the shipment. A licensee who receives a shipment must immediately notify the shipper. Shipments which fail to arrive at the destination on time must be traced, and the NRC must be notified.

To aid licensees in carrying out the new requirements for the protection of SNM in transit, the Commission issued a number of new Regulatory Guides which set forth acceptable ways for complying with selected requirements. These are listed in Appendix C.

In November, 1974, the Commission published new proposed regulations to further strengthen the protection of nuclear material in transit. The regulations propose, among other things, a significant strengthening of the armed escort which accompanies the shipments.

INSPECTION AND ENFORCEMENT

As in previous years, the Regulatory materials and plant protection inspection program assured through inspections that licensees have established and are maintaining an effective program to protect the health and safety of the public against the release of radioactive materials that could result from industrial sabotage and to protect against the diversion of SNM which could be used to manufacture nuclear weapons. During 1974, 219 safeguards related inspections were conducted, of which 86 were reactor inspections and 133 were fuel cycle facility inspections. There were 9 incidents of serious safeguards violations, for which a total of approximately $70,000 in civil penalties was imposed.

EFFECTIVENESS OF SAFEGUARDS--ADEQUACY OF COVERAGE

The upgraded physical security and material control and accounting systems implemented during 1974 have been effective in protecting nuclear facilities and special nuclear material at licensee sites in that no incidents of sabotage or theft have been recorded. Nonetheless, protection systems must be reviewed and upgraded periodically to protect against new threats and against new technology which becomes available to adversary forces.

Accordingly, the AEC had initiated a planned further upgrading actions relating to safeguards. The plans will be reevaluated by NRC as to adequacy and scheduling. These include such actions as:

1. Automated processing, material handling and inventory data aquisition and analysis.

2. Design basis incident analysis to identify and analyze the safeguarding of SNM.

3. Vulnerability analysis to identify weaknesses in safeguards systems and to develop mechanisms for overcoming such weaknesses.

4. Threat analysis and level of protection studies to provide a continuing analysis of possible terrorist activities that might affect the nuclear industry.

5. Design criteria studies to evaluate concepts of facility design for safeguarding SNM.

6. Response mechanism studies to identify the roles to be performed by various groups and agencies in response to safeguards incidents.

7. Diversion path analysis studies to identify process changes which serve as indicators of possible or attempted diversion of SNM.

In addition to the actions listed above, NRC is conducting a study as called for in the Energy Reorganization Act of 1974, to assess the need for, and the feasibility of, establishing a Federal security agency to maintain safeguards against threats, thefts and sabotage of licensed materials and facilities. This study will be prepared and transmitted to the Congress by the Commission within approximately one year.

APPENDIX A

Regulatory Guides Issued in 1974 which Relate to Protection of Fixed Sites.

5.15 Security Seals for the Protection and Control of Special Nuclear Material. 1/74

5.20 Training, Equipping, and Qualifying of Guards and Watchmen. 1/74

5.27 Special Nuclear Material Doorway Monitors. 6/74

5.30 Materials Protection Contingency Measures for Uranium and Plutonium Fuel Manufacturing Plant. 6/74

APPENDIX B

Regulatory Guides Issued in 1974 which Relate to Materials Accounting.

5.16 Standard Methods for Chemical, Mass Sectrometric, Spectrochemical Nuclear, and Radiochemical Analysis of Nuclear-Grade Plutonium Nitrate Solutions and Plutonium Metal. 1/74

5.18 Limit of Error Concepts and Principles of Calculation in Nuclear Materials Control. 1/74

5.19 Methods for the Accountability of Plutonium Nitrate Solutions. 1/74

5.21 Nondestructive Uranium -235 Enrichment Assay by Gamma-Ray Spectrometry. 4/74

5.22 Assessment of the Assumption of Normality (Employing Individual Observed Values). 4/74

5.23 In Situ Assay of Plutonium Residual Holdup. 5/74

5.24 Analysis and Use of Process Data for the Protection of Special Nuclear Material. 6/74

5.25 Design Considerations for Minimizing Residual Holdup of Special Nuclear Material in Equipment for Wet Process Operations. 6/74

5.26 Selection of Material Balance Areas and Item Control Areas. 6/74

5.28 Evaluation of Shipper-Receiver Differences in the Transfer of Special Nuclear Materials. 6/74

5.29 Nuclear Material Control Systems for Nuclear Power Plants. 6/74

5.33 Statistical Evaluation of Material Unaccounted For. 6/74

5.34 Nondestructive Assay for Plutonium in Scrap Material by Spontaneous Fission Detection. 6/74

5.35 Calorimetric Assay of Plutonium. 6/74

5.36 Recommended Practice for Dealing with Outlying Observations. 6/74

5.37 In Situ Assay of Enriched Uranium Residual Holdup. 8/74

5.38 Nondestructive Assay of High-Enrichment Uranium Fuel Plates by Gamma Ray Spectrometry. 9/74

5.39 General Methods for the Analysis of Uranyl Nitrate Solutions for Assay, Isotopic Distribution, and Impurity Determinations. 12/74

APPENDIX B (continued)

5.40 Methods for the Accountability of Plutonium Dioxide Powder

5.45 Standard Format and Content for the Special Nuclear Material Control and Accounting Section of a Special Nuclear Material License Application. 12/74

APPENDIX C

Regulatory Guides Issued in 1974 which Relate to Protection of SNM During Transportation.

5.15 Security Seals for the Protection and Control of Special Nuclear Material. 1/74

5.17 Truck Identification Markings. 1/74

5.31 Specially Designed Vehicle with Armed Guards for Road Shipment of Special Nuclear Material. 6/74

5.32 Communication with Transport Vehicles. 6/74

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