



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.

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DATE 8/15/96 BY EQTEN EYCK #0776

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

Enclosure:

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

Clarence M. Kelly, Director, FBI
Auth: W. Raymond Wannall, Asst. Dir., Intelligence Div.



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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 Safe-
guards, 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 mate-
rials 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.

Concurrent:

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

Controls SS 2848 & Admin. 05017535

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May 6, 1975

STATUS OF DOMESTIC SAFEGUARDS

INTRODUCTION

Reference

In response to the conclusions of the Domestic Safeguards Section of NSSM-120¹, NSDM-254² 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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William C. Bartels

William C. Bartels

Act. Asst. Dir. for P&S, SS
U.S. ERDA, 5/20/75

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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.

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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

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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 for implementation by the nuclear industry. No matter the origin of 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

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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 under way 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

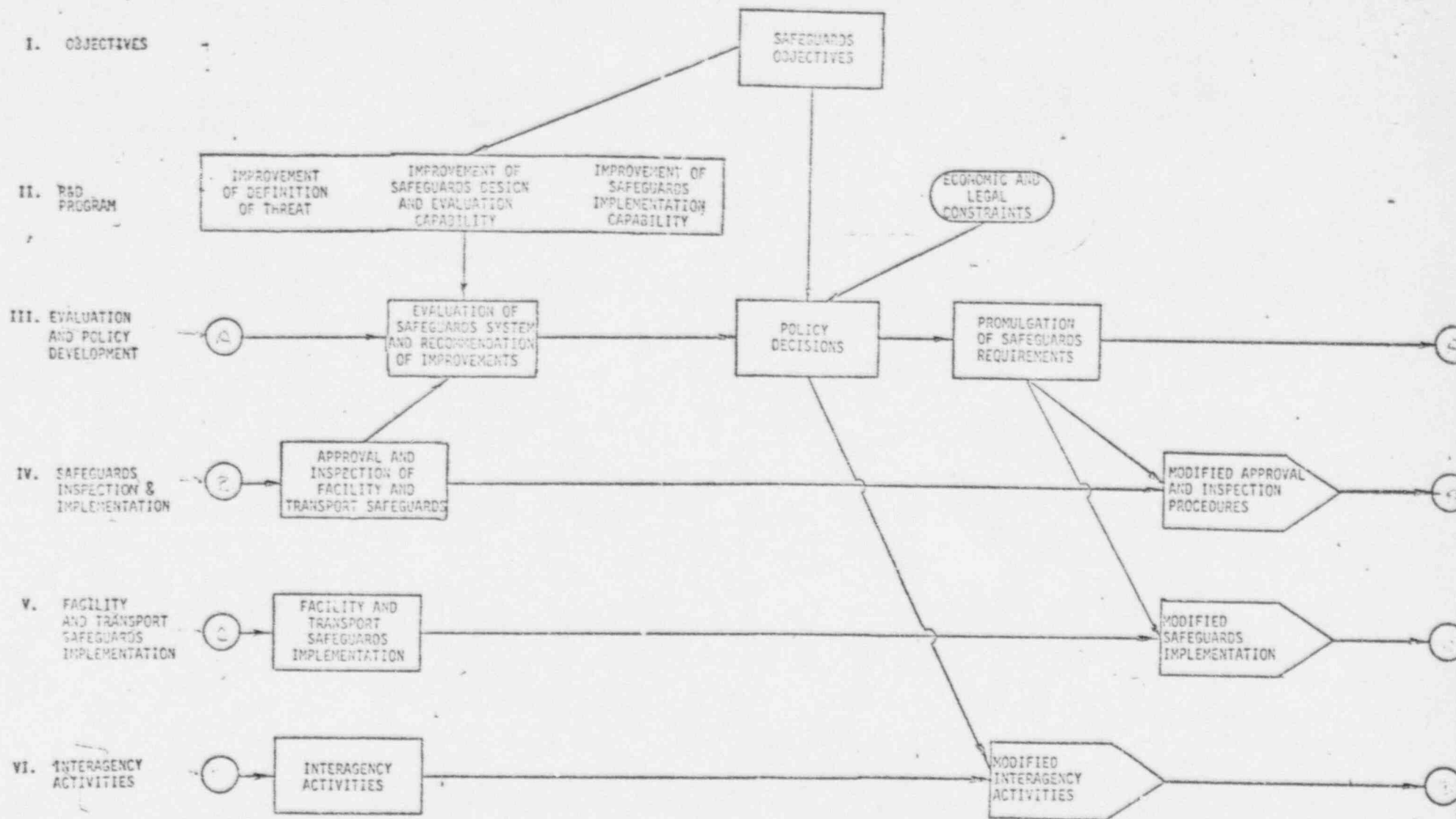


Figure 1. Safeguards program elements.

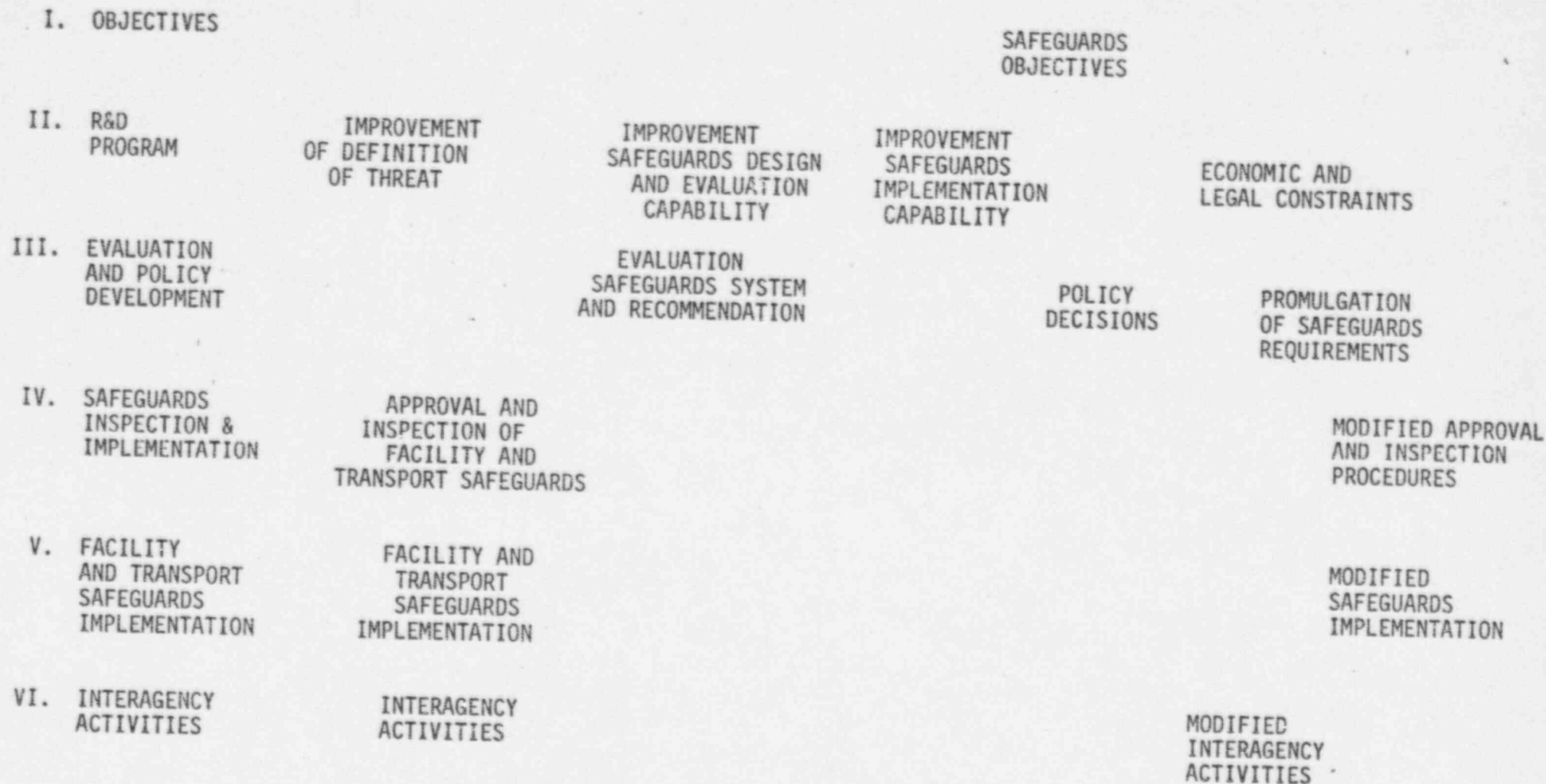


Figure 1. Safeguards program elements.

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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

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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.

[REDACTED]

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

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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 November 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.

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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.

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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-

wa; monitors has been identified and documented.

NRC:

Regulations and accompanying 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. EPDA 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.

[REDACTED]

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 provide 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

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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

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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.

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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 to 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 require any 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

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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

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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).