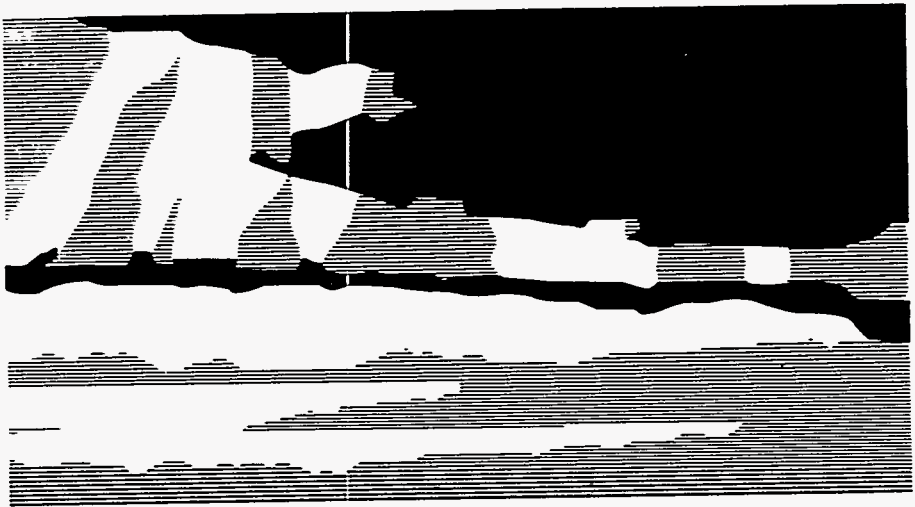


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SAFEGUARDS REQUIREMENTS

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INTERNATIONAL INSPECTION ACTIVITY IMPACTS UPON DOE SAFEGUARDS REQUIREMENTS*

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ABSTRACT

The United States has placed certain special nuclear materials declared excess to our strategic needs under international safeguards through the International Atomic Energy Agency (IAEA). This Presidential initiative has obligated materials at several Department of Energy (DOE) facilities for these safeguards activities to demonstrate the willingness of the US to ban production or use of nuclear materials outside of international safeguards. However, IAEA inspection activities generally tend to be intrusive in nature and are not consistent with several domestic safeguards procedures implemented to reduce worker radiation exposures and increase the cost-effectiveness and efficiency of accounting for and storing of special nuclear materials. To help identify and provide workable solutions to these concerns, the Office of Safeguards and Security has conducted a program to determine possible changes to the DOE safeguards and security requirements designed to help facilities under international safeguards inspections more easily comply with domestic safeguards goals during international inspection activities. This paper will discuss the impact of international inspection activities on facility safeguards operations and departmental safeguards procedures and policies.

INTRODUCTION

The President's unexpected offer to place excess special nuclear materials under international safeguards

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monitoring resulted in a new era for the Department of Energy's (DOE's) safeguards and security programs. No longer would the focus be principally on the protection of special nuclear materials produced for strategic requirements. The new direction would include greater emphasis on nonproliferation of nuclear weapons capabilities and materials as well as redefining Office of Safeguards and Security (OSS) policies to support international inspection activities. The DOE would support the US goal to demonstrate to the other countries with nuclear weapons that the US was meeting its Nonproliferation Treaty (NPT) commitment to dismantle weapons of mass destruction as well as to prevent proliferation of weapons capabilities to nonnuclear weapons states.

Placing excess special nuclear materials under international safeguards through the International Atomic Energy Agency (IAEA) required a modification of the accounting philosophy in use at the obligated facilities. Previously, the DOE's and facilities' concern was to protect the nuclear materials against theft or diversion from workers and other insiders as well as outsiders and terrorists who might want to obtain nuclear material for malevolent purposes. However, the IAEA inspection activities are to provide assurance that peaceful use activities are not being used to support clandestine or undeclared nuclear weapons production. From this viewpoint, the safeguards and security systems that have been developed through technology development programs and have been installed to control and account for nuclear materials are not in their present (or designed) mode of operation useful to the IAEA. These systems were (and are) unacceptable for IAEA safeguards because they were operated and

controlled by the facility. The information coming from these systems had not been authenticated for use by the IAEA. The facilities did not have the resources nor the time to implement dual containment/surveillance measures acceptable by the IAEA to reduce IAEA inspection impacts upon the facilities.

The impact of international inspection activities upon the excess fissile material of the US has been studied before implementation of international safeguards at DOE facilities. The Weapons' Complex Reconfiguration Program designed a prolonged, low-maintenance, plutonium storage facility to house both strategic and excess nuclear materials.¹⁻³ At the time of the Presidential initiative, the design team recognized that the unclassified excess materials would have to be housed and handled separately from the strategic materials for classification reasons, thus increasing the cost of the facility and its operation. The opportunity to take advantage of the DOE's recent initiatives to reduce costs and worker radiation exposures in locations selected for international inspection could not be fully realized.

Recent papers have discussed materials control and accounting (MC&A) policy issues for international inspections at DOE facilities^{4,5} and design considerations for new storage facilities that will be subject to third party inspections.⁶ This paper will limit its discussion to impacts to DOE safeguards and security orders brought about by placing certain excess nuclear materials of the DOE under IAEA safeguards. These impacts have been seen at DOE facilities that currently have special nuclear material under international safeguards and can be expected to be seen at facilities where materials may be obligated in the future. To help identify and provide workable solutions to these issues raised by IAEA inspection activities, the OSS is conducting a program to determine possible changes to the DOE safeguards and security requirements. These changes will be designed to help facilities under international inspection more easily comply with domestic safeguards goals. Facilities that currently have materials under international safeguards and those anticipating having materials offered under the Presidential initiative have provided information to this task concerning possible areas of impact to the domestic safeguards and security orders.

DISCUSSION

The US DOE has two facilities, the Hanford Site near Richland, Washington, and the Y-12 Facility at Oak Ridge, Tennessee, that have special nuclear materials that are under international safeguards monitoring by the IAEA. Two other facilities, the Rocky Flats Environmental Technology Site near Denver, Colorado, and the Savannah River Site at Aiken, South Carolina, have materials that may be made available in the near future for international inspection activities. Many of the activities that occurred to permit IAEA inspections at one facility have been documented and lessons learned have been made available to other facilities.⁷ The impacts to the requirements are being addressed by this work with the goal of suggesting modifications to domestic safeguards and security policy and guidance to support international inspection activities without unacceptable risk to the nuclear materials.

The facilities viewed international inspections as possibly compromising their rigorous safeguards and security programs by permitting uncleared foreign nationals access to the special nuclear materials. Initially, one facility believed that having materials placed under IAEA safeguards was inconsistent with order compliance. However, these new challenges caused the safeguards and security programs at the facilities to create innovative solutions to perceived problems, in many cases without assistance from the DOE. However, the Offices of Security Affairs and Arms Control and Nonproliferation have worked together to implement measures, which protect vital national security interests while meeting global non-proliferation goals.

Concerns and issues that were raised by the facilities are presented below. Of course, not every concern or issue will have an impact on a DOE Order. This discussion will highlight higher level components where the actions of the facilities to support IAEA activities may produce modifications to the current safeguards and security guidance and orders.

Physical Protection

Information concerning physical protection systems, for example, area and materials monitoring, access control, alarms, response capabilities, was not needed and was not given to the IAEA in completing the design information questionnaire. One facility felt

that the IAEA must be prevented from having this information to be in compliance with the Orders. Systems identity and type were masked, procedures were changed, and locations were modified to protect security systems and procedures that were used elsewhere. Another facility considered the information as being available to the IAEA but did not provide it to them or hide it from the inspectors. They did not significantly change procedures from what would be expected or permitted of facility workers accessing the materials under international safeguards. These opposite techniques worked and were approved by the respective DOE Field Offices.

From an access control perspective, specific direction concerning the badging and handling of inspectors was not available to help the facilities to try to standardize equipment, badges, and procedures. Similarly, no information was available as to whether interactions with the inspectors were to be considered as with foreign nationals (some from sensitive states) or as a special diplomatic class. Detailed direction concerning this issue was not available.

In several meetings with facility and DOE personnel, the IAEA requested special treatment concerning access to the facility and materials, searching of possessions and computers, and treatment as special diplomats. However, as dictated by treaty, IAEA personnel have to comply with the same entry and search procedures as employees with their property treated the same as with US government property as long as the property is tagged with IAEA property tags.

Computer/Information Security

A main issue was whether and how the inspectors could receive and hand-carry classified information. This concern was resolved with similar issues addressed by physical security personnel. Classified documentation is forwarded to the IAEA through US government offices in Vienna, Austria. However, one facility believes that clarification is needed as to what classified information is to be made available to the IAEA and any bilateral inspectors. IAEA inspectors have been given access to pertinent confidential-level information with no access to any restricted weapons data. Inspectors may bring portable computers with them during inspections but the facility is not permitted to review information the inspectors have entered. Information contained in portable computers carried by employees is subject to review at any time.

Marking of classified documents that are available to the IAEA was originally inconsistent with the current domestic classification guide, but was resolved by the DOE. Initially, classified information was to be made available to the inspectors. However, this raised a concern that the inspectors could have that information in their hotel rooms while a worker with the same information would be in violation of domestic laws. As highlighted earlier, this issue was resolved by forwarding all related classified information to the IAEA rather than providing it to inspectors to hand-carry to their office.

Counter-Intelligence

No conflicts with existing orders or other issues exist in this area as inspectors are not treated any differently than any other worker and are not treated as if they are foreign nationals. Checks are still conducted to determine any sensitive issues associated with each inspector.

One facility felt that guidance concerning interactions with sensitive country IAEA inspectors is needed. They felt that DOE requirements should be updated to limit the number of personnel interacting with international inspection personnel with a formal course of instruction required for all personnel that would interact with inspectors. Also, operations security and counter-intelligence guidance/orders should be upgraded to include treaty and bilateral inspection activities.

Material Control & Accountability

Quite a few more issues were identified for MC&A. Specific concerns addressed the need for DOE requirements to take credit for IAEA activities and equipment. For example, because the IAEA applies its own seals for surveillance of the item, the facility seals do not provide any extra assurance. While their inspections are intrusive but secure, inspector access into the vault may not be considered secure even with additional facility personnel present. Unsecured access would prevent the facility from extending the time between physical inventories as permitted under current domestic policy.

Modified guidance and policies are needed to permit the facility to take domestic credit for the physical inventories performed by the IAEA. The correct combination of procedures coupled with security

surveillance should allow the facility to also meet the DOE physical inventory requirements. Unfortunately, domestic monitoring systems that can be used to extend the frequency of physical inventories are not acceptable for use by the IAEA. The performance of systems must be tested on a routine basis, but storage facility systems can only be checked when the IAEA is present. For these issues, OSS has recently provided means for the facilities to take credit for the IAEA's monthly and annual inventory activities as a response to their initial experiences with the inspections.

Currently, the IAEA has the choice not to give measurement data to the facilities on the items they will assay during a physical inventory, so the facility may not be able to take credit for those measurements. These would include weight and nondestructive assay verification/confirmation measurements. The facility cannot pull any needed destructive analysis samples without the IAEA having to re-inventory or, at least, be present to view the sampling. DOE must ensure an open exchange of measurement data collected on IAEA safeguarded materials.

To hold down costs and use current equipment more effectively, facilities will jointly use sampling equipment and measurement support instrumentation with the IAEA to the extent permissible. The material under IAEA safeguards has a different reporting identification symbol (RIS) than the other material in different locations at the facility. To be able to use the facilities' domestic equipment, we need a flexible material balance area (MBA) that expands from the IAEA RIS vault MBA as needed. The expansion incorporates the sampling/packaging work area and the measurement equipment that is generally used only for non-IAEA safeguarded material. The IAEA has approved this concept but only when the IAEA is present. The facilities believe DOE policy requires modification to permit a reduction of RIS to RIS transfer paperwork, but such concepts have been employed at previous facilities using currently available guidance.

Two sets of instructions had existed concerning the means to transmit inventory data to the IAEA. However, the IAEA resolved the issue by only accepting data that is on the United States' Nuclear Material Management and Safeguards System (NMMSS). The completed facility attachment will define the RIS and reporting requirements.

CONCLUSIONS

Many of the issues and concerns resulting from placing DOE special nuclear materials under international safeguards are procedural and will require new applications of safeguards and security policies and guidance but not new policy, guidance, or reclassification of information. In many respects, the concerns expressed above generally required only innovative applications of the existing orders and guidance to be successfully resolved. In other areas such as badging of inspectors, both facilities' procedures appear acceptable. However, consideration should be given to establishing methods for all facilities to follow. For several issues, guidance issued by OSS successfully permitted implementation of cost-saving and exposure-reduction procedures that take advantage of IAEA inspection activities.

Operations security, personnel security, computer/information security, MC&A, and several physical protection issues raised by the facilities have required new applications of existing policies. Several new procedures are mandated by treaty with the IAEA. INFCIRC/153(Corrected)⁸ provides for the status and functions of IAEA inspectors accessing the facilities. This agreement also dictates the obligations of the US and the IAEA for materials under international safeguards.

The new issue facing DOE and their nuclear materials facilities is that they are being viewed by the IAEA as the potential diverters of nuclear material for use in a clandestine weapons production program. DOE programs have previously viewed the threat as being from outsiders and insiders, but not the government or facilities themselves. For this reason, the systems that the facilities use to control and monitor nuclear materials are not acceptable for IAEA use because they could be part of the state's program for diversion.

The most troublesome impact upon facilities is that they are not able to implement recent changes in DOE policy and guidance that were designed to increase efficiency, decrease costs, and reduce worker radiation exposure. The principal impact was that the nuclear material storage facilities could not extend the frequency for physical inventories to multiple years as is possible under domestic requirements because the IAEA requires an annual physical inventory. If the

facility could implement dual containment/surveillance methods acceptable to the IAEA, then the IAEA's annual physical inventory could be extended to every two or more years. However, these dual containment/surveillance methods must also coincide with the techniques usable domestically to extend the inventory frequency. Until the facilities are able to implement acceptable dual containment/surveillance techniques and domestic systems are authenticated for IAEA use, the maximum duration between physical inventories for DOE materials under IAEA safeguards will be one year. In this regard, the OSS has indicated their intention to support a joint Los Alamos and Sandia Task to identify authentication requirements and procedures as well as to authenticate DOE developed technology. The IAEA has indicated their strong support for the authentication task.

Issues raised when additional DOE facilities have special nuclear materials that are brought under international safeguards may produce new modifications to or additional new applications of the safeguards and security orders. As of this time, the impacts already seen may result in clarifications to existing policies and guidance but do not appear to produce significant in-depth or new-direction changes. However, the Government, with consultation from the facility and DOE, is negotiating a facility-specific attachment with the IAEA. When completed, the facility attachment as a treaty obligation may supersede the DOE's safeguards and security guidance and policy whenever requirements overlap for that facility.

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