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BY THE U.S. GENERAL ACCOUNTING OFFICE

## Report To The Secretary Of Energy

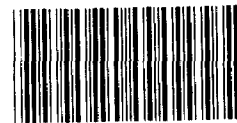
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# The U.S. Nuclear Materials Information System Can Improve Service To Its User Agencies

The computer-supported information system, the Nuclear Materials Management and Safeguards System, is the most comprehensive transaction data file available on U.S. nuclear materials in domestic and international commerce. Domestically, it tracks movement of nuclear materials and supports licensing and inspection activities at nuclear facilities. Internationally, its information is used to assist in policymaking, arms control activities, and fulfilling U.S. international obligations. The Department of Energy (DOE) and the Nuclear Regulatory Commission manage and fund the system and are its most extensive users. A number of other entities also use information from the system.

Some users do not believe system data are reasonably accurate and adequate for their purposes. Problems with the system have been identified in numerous DOE-sponsored studies and in a prior GAO report. Efforts have been made to improve the system, especially the accuracy of its data on international transactions; however, further management and operational improvements are needed to make it more effective in serving users.

GAO recommends several actions for DOE including: developing a long-range management plan for the system, establishing an interagency steering committee to oversee the planning process, evaluating the organizational responsibilities for the system, and reviewing various operational improvements identified in previous studies and implementing the most cost-effective ones.



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RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-216984

The Honorable Donald Paul Hodel  
The Secretary of Energy

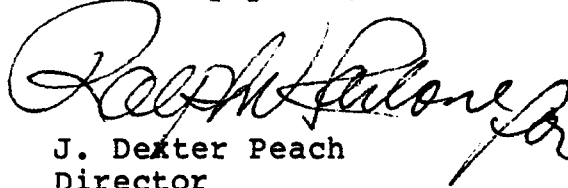
Dear Mr. Secretary:

This report discusses the Department of Energy's computerized transaction file on domestic and international nuclear materials--the Nuclear Materials Management and Safeguards System (NMMSS). It addresses the status of efforts to improve NMMSS, user-agency concerns, and improvements to NMMSS that will permit it to better serve these users.

The report contains recommendations to you on page 19. As you know, 31 U.S.C. 720 requires the head of a federal agency to submit a written statement of actions taken on our recommendations to the Senate Committee on Government Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of report.

We are sending copies of this report to the Secretary of State; the Chairman, Nuclear Regulatory Commission; the Director, Arms Control and Disarmament Agency; and to others as requested.

Sincerely yours,



J. Dexter Peach  
Director



D I G E S T

The United States has been involved in nuclear materials commerce since 1954, an integral part of which requires accounting for special nuclear materials. Manual data collection was used until 1964 when the former Atomic Energy Commission established a computer-supported information system called the Nuclear Materials Management and Safeguards System (NMMSS). NMMSS is the most comprehensive data file of transactions available on both domestic and international commerce of U.S. nuclear materials. Data on 18 nuclear materials, including the types of uranium and plutonium that can be used directly to manufacture nuclear explosives, are reported to NMMSS by approximately 96 Department of Energy (DOE) contractors, 1,400 Nuclear Regulatory Commission (NRC) licensees, 25 commercial nuclear disposal sites, and 75 foreign nations or organizations. It contains about 300 computer programs, produces 180 routine and/or ad hoc reports, and requires a staff of about 40 people.

MANY AGENCIES USE NMMSS,  
BUT SOME ARE NOT SATISFIED WITH IT

NMMSS has both domestic and international uses. Domestically, it tracks movement of nuclear materials and supports licensing and inspection activities at nuclear facilities. Internationally, its information is used to assist in policymaking, arms control activities, and fulfilling U.S. international obligations. NMMSS is jointly managed and funded and used most extensively by DOE and NRC. Other principal users or recipients of NMMSS-generated information include the Department of State, the U.S. Arms Control and Disarmament Agency (ACDA), and the International Atomic Energy Agency. Less frequent users include foreign governments, state/municipal jurisdictions, Congress, and the general public.

Some users believe NMMSS data are not reasonably accurate and adequate for their purposes.

For example, State Department and ACDA need information on nuclear materials internationally; however, both find NMMSS incomplete for their needs and express concerns about accuracy and insufficient detail of NMMSS information, its occasional untimeliness, and their lack of easy access to the system. (See p. 10.)

Some of these problems have been recognized and efforts have been made to improve the system, especially the accuracy of data on international transactions. In 1982, an effort to verify the accuracy of international transaction data for the period 1954 through September 1978 was completed. This "backfit" project corrected many discrepancies, but because the necessary records were not available, GAO could not systematically identify whether data are still missing. DOE officials told GAO that the accuracy problem will continue to be addressed in the process of reconciling data with foreign governments. To date, only Australia has reconciled its nuclear material balances with U.S. records. Two other countries have expressed interest in reconciling their records but no commitments to proceed have been made. (See pp. 11-12.)

FURTHER IMPROVEMENTS WILL  
ENABLE NMMSS TO BETTER  
SERVE ITS USERS

Numerous independent studies of NMMSS have recommended a number of improvements. Some have not been implemented, others have been progressing slowly, and some have been suspended. In addition, NMMSS users have identified the following improvement opportunities which would enable the system to better serve them. (See pp. 14-17.)

--NRC identified the need for direct access to licensee data. (Several analyses, dating back to 1981, have shown the feasibility of direct access; however, DOE has not completed action on the issue or determined the cost to do so.)

--Automated data input equipment could improve source data accuracy. (Such equipment could significantly reduce current high error rates in source data; cost estimates for developing this capability have not been developed.)

--A data base management system should improve NMMSS efficiency and improve timeliness and access for users. (The conversion to such a system began in 1979 but has progressed slowly. The estimated completion of this effort has slipped more than 2 years, from September 1982 to December 1984.)

A long-range management plan for NMMSS is needed for use in approving, controlling, and evaluating activities. Such a plan would provide a rationale for decisionmaking and for setting priorities for NMMSS improvements or enhancements. (See p. 14.)

To set the stage for effectively developing a NMMSS management plan, the organizational and management responsibilities for NMMSS should be reviewed to assess and clarify responsibility and authority for NMMSS planning. The current organizational structure does not allow the fully integrated central planning that is needed. In addition, active involvement in plan formulation is essential for those organizations that might be affected in order to enhance the chances for successfully developing and implementing the plan. One possible way to accomplish this is to have an executive management or steering committee responsible for seeing that all NMMSS requirements are included in the plan. (See p. 15.)

#### RECOMMENDATIONS

GAO recommends that the Secretary of Energy:

- Develop a NMMSS long-range management plan which allows for top-management involvement by the principal NMMSS users and principal recipients of NMMSS-generated data.
- Establish an interagency steering committee which would be responsible for seeing that the functional, technical, and financial aspects of NMMSS are included in the long-range management plan.
- Complete the Data Base Management System project.
- Evaluate the current organizational responsibilities for NMMSS and implement the specific changes needed to improve planning and operations.

--Review, as part of the planning process and with the assistance of other principal users, the various NMMSS operational improvements that are under way or which have been identified in previous DOE-sponsored studies, and implement those found to be cost effective. This review should consider the improvements from an overall system viewpoint, rather than on an individual basis. (See p. 19.)

#### AGENCY COMMENTS

DOE agreed that a long-range NMMSS management plan is needed and noted that a commitment for adequate long-term funding is also necessary. The State Department commented that the recommendations are reasonable and that an interagency steering committee could be an effective mechanism for implementing them.

ACDA thought that the report provided an objective review of NMMSS and made reasonable recommendations for improving its efficiency, accuracy, and utilization. ACDA specifically supported the GAO recommendation to establish an interagency steering committee and added that the committee should examine alternatives for enhancing the effectiveness and efficiency of NMMSS in support of U.S. safeguards obligations, and explore the possibilities for expanding the applications of NMMSS.

NRC's comments on the draft report did not specifically address GAO's recommendations. The comments from each agency are included in appendices II through V.



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ABBREVIATIONS

ACDA	Arms Control and Disarmament Agency
ADP	Automatic Data Processing
DBMS	Data Base Management System
DOE	Department of Energy
EURATOM	European Atomic Energy Community
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
INMTS	International Nuclear Materials Tracking System
NMMSS	Nuclear Materials Management and Safeguards System
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NRC	Nuclear Regulatory Commission

## CHAPTER 1

### INTRODUCTION

In 1954, the United States started both domestic and international commerce in nuclear materials. Accounting for special nuclear materials<sup>1</sup> was an integral part of this new activity. Such accounting is important to (1) help protect nuclear materials from loss, theft, or other diversion; (2) comply with international obligations; (3) maintain a level of knowledge about exports, imports, and retransfers of nuclear materials; and (4) provide data for policymaking on U.S.-origin nuclear materials overseas.

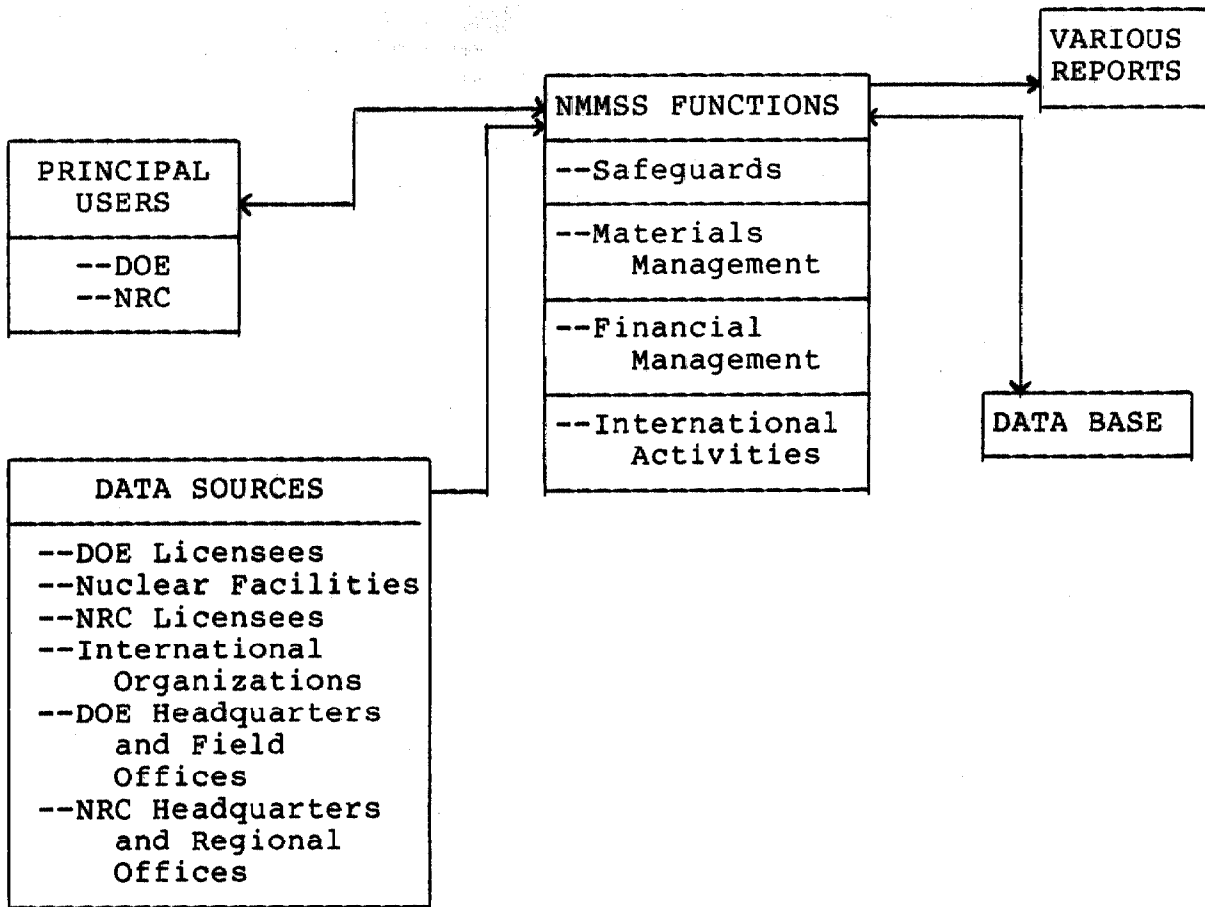
Accounting was done manually until 1964 when the former Atomic Energy Commission (AEC) established a computer-supported information system called the Nuclear Materials Management and Safeguards System (NMMSS), which is maintained by the Martin Marietta Energy Systems, Inc., in Oak Ridge, Tennessee, under a Department of Energy (DOE) contract.<sup>2</sup> NMMSS provides (1) information needed for meeting DOE's nuclear materials management and financial accounting requirements and (2) data on nuclear materials covered by licenses issued by the Nuclear Regulatory Commission (NRC). Presently, NMMSS contains about 300 computer programs, can produce 180 routine and/or ad hoc reports, and requires a staff of about 40 people. Data on nuclear materials are received from approximately 96 DOE contractors, 1,400 NRC licensees, 25 commercial nuclear disposal sites, and 75 foreign nations or organizations. These data are normally submitted from a variety of sources. The following chart shows the data flow in NMMSS.

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<sup>1</sup>Special nuclear material is defined under the Atomic Energy Act of 1954, as amended, as plutonium, uranium enriched in the isotope U-235, and uranium containing the isotope U-233.

<sup>2</sup>Prior to April 1984, the Union Carbide Corporation-Nuclear Division was responsible for NMMSS under a DOE contract.

## NMMSS Data Flow



In addition to DOE and NRC, a number of other entities are recipients of NMMSS data, such as the Department of State, the U.S. Arms Control and Disarmament Agency (ACDA), and the International Atomic Energy Agency (IAEA). Requests for information are also received from foreign governments, state/municipal jurisdictions, Congress, GAO, and the public.

In 1982, we reported<sup>3</sup> that NMMSS information on highly enriched uranium (HEU)<sup>4</sup> was incomplete and inaccurate, and we recommended that HEU information be maintained in an accurate,

<sup>3</sup>Obstacles to U.S. Ability to Control and Track Weapons-Grade Uranium Supplied Abroad (GAO-ID-82-21), August 2, 1982.

<sup>4</sup>Highly enriched uranium refers to uranium which has been enriched to 20 percent or more in the isotope U-235. However, HEU is typically uranium enriched to 93 percent U-235.

comprehensive, and usable manner. In this report, we address the current status of NMMSS and the improvements needed to help it more effectively serve its users.

## ACCOUNTING FOR NUCLEAR MATERIAL

NMMSS accounts for 18 types of U.S.-origin nuclear materials, both domestically and internationally (see app. I), and certain foreign-origin material located in the United States. The differences between domestic and international accounting under NMMSS involve completeness, intent, and relationship to nuclear proliferation concerns.

### Domestic accounting

NMMSS tracks nuclear materials at both government-owned and government-licensed facilities within the United States. DOE orders and NRC regulations impose various obligations for reporting nuclear material transfers, inventories, and balances. Accurate accounting is essential to help determine that no material is lost or stolen.

DOE instructions provide detailed guidance on the procedures to be used by DOE facilities and contractors in submitting data on all 18 reportable nuclear materials to NMMSS and assign the responsibility for NMMSS operation and management to specific DOE officials. DOE's Director of Safeguards and Security has overall responsibility for developing policies, procedures, and standards for compiling and reporting nuclear materials transactions, inventory, and material balance data to NMMSS from DOE facilities. DOE instructions also specify that NMMSS shall provide the information required under the provisions of the agreement for applying international nuclear safeguards at U.S. nuclear facilities. (See p. 6.)

Two sets of instructions from DOE predecessors' manuals also impose information requirements on NMMSS. The first, issued by the former Atomic Energy Commission, specifies material transactions and inventories to be reported. The second, from the former Energy Research and Development Administration's Manual, requires that the nuclear content of scrap materials also be included in NMMSS records. Both instructions are still in force.

NRC regulations provide guidance on the procedures to be used by its licensees to complete and submit information on several reportable nuclear materials<sup>5</sup> to NMMSS: (1) material balance reports which contain information on special nuclear materials receipts, production, possessions, shipments, and losses; (2) physical inventory listings which are statements of

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<sup>5</sup>The seven materials are: uranium, depleted uranium, enriched uranium, plutonium, plutonium-238, thorium and uranium-233.

the composition of the ending inventory of special nuclear material; and (3) nuclear material transaction reports which contain information on licensees' receipts and shipments of special nuclear material and source material.

### International accounting

NMMSS has accounted for U.S. exports and imports of nuclear materials since 1977 when the International Nuclear Materials Tracking System (INMTS) was added to it. This NMMSS subsystem contains data on international nuclear materials transactions, foreign contracts, import/export licensees, and authorizations to retransfer U.S.-origin material between foreign countries. International accounting is by individual country (or group of countries in the case of EURATOM<sup>6</sup>) and not by facility within a country. International agreements generally require reporting on only source and special nuclear material.

As noted in our 1982 report, NMMSS/INMTS cannot assure the current facility location, or even the country location in EURATOM, of U.S.-supplied material. Also, it does not show the current status of the exported material. However, NMMSS enables the United States to meet the reporting requirements of its agreement with IAEA and of bilateral agreements with other countries. The State Department believes NMMSS is adequately performing those reporting functions supporting the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)<sup>7</sup> and international safeguards. State noted that, in the past, there were problems in the timely and correct preparation of the reports required by the US/IAEA Safeguards Agreement (see below). These problems, according to State, stemmed largely from the basically different accounting philosophies of the U.S. and IAEA systems. These problems are now resolved or are in the process of being resolved. State believes, however, that the problems may indicate areas where greater flexibility might be built into NMMSS as the system undergoes major review and revision (see chapter 3).

### U.S./IAEA safeguards agreement

On December 9, 1980, the "Agreement Between the United States of America and the International Atomic Energy Agency for

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<sup>6</sup>The European Atomic Energy Community, comprising Belgium, Denmark, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, the United Kingdom, and West Germany, was established in 1957 to "create conditions necessary for the speedy establishment and growth of nuclear industries" in member countries.

<sup>7</sup>The NPT requires nonnuclear weapon party nations to "accept safeguards, as set forth in an agreement to be negotiated and concluded with [IAEA]...."

the Application of Safeguards in the United States of America" entered into force as a treaty. This agreement formalized the voluntary U.S. offer to permit IAEA to apply its safeguards to all U.S. nuclear facilities (except those with direct national security significance). The United States made its voluntary offer to encourage widespread adherence to the Treaty on the Non-Proliferation of Nuclear Weapons by demonstrating to nonnuclear weapon countries that IAEA safeguards would not place them at a commercial disadvantage.

Article 7 of the agreement requires the United States to "establish and maintain a system of accounting for and control of all nuclear materials subject to safeguards" under the U.S.-IAEA agreement. The agreement also requires the United States to furnish IAEA certain reports, including monthly inventory change reports, semiannual or, in some cases, annual material balance reports, and physical inventory listing reports. An annual material balance report includes

- beginning physical inventory,
- inventory changes,
- ending book inventory,
- shipper/receiver differences,
- ending physical inventory, and
- material unaccounted for.

NMMSS has been designated as the article 7 system and is required to provide the specified reports.

In addition, the United States has agreed voluntarily to supply both advance information on intended exports and imports of nuclear material and confirmation of actual quantities, composition, and date of shipment immediately after shipment as documented in the IAEA Information Circular 207.

NMMSS compiles this information and prepares the required reports for official U.S. government transmittal to IAEA.

#### Bilateral agreements for nuclear cooperation

The United States is also obligated to meet certain safeguards requirements in agreements for cooperation with other nations on the peaceful uses of nuclear energy. Currently, the bilateral agreements with Australia and Canada require the United States to maintain a national system of accounting for and control of nuclear materials transferred to the United States under the agreements. The Australian agreement is the more stringent, but both require tracking of their respective nuclear materials to ensure that they are used only for peaceful purposes.

According to U.S. officials, specific identification and separate handling of foreign-origin materials are often impossible tasks. For example, separation cannot be maintained when

materials from many sources are mixed into new nuclear products, such as fuel assemblies containing fuel pellets produced with uranium from a number of sources. In such cases, the United States designates an equivalent amount of mixed material to be of foreign origin. According to DOE officials, the foreign governments involved have agreed to this approach.

NMMSS has been designated as the key system for supplying data needed to comply with these bilateral agreements. However, it is not the sole source. For example, in tracking Australian origin uranium, several sources in addition to NMMSS are used, including contract files, financial records, and delivery schedules.

### Nuclear proliferation concerns

Of the 18 types of materials included within NMMSS, 3 (HEU, plutonium, and U-233) are of primary interest from a proliferation standpoint.<sup>8</sup> Much more HEU has been exported than either plutonium or U-233. (See app. I.)

Current and previous administrations have indicated that HEU poses potential proliferation dangers. For example, in April 1976, DOE's predecessor agency (the Energy Research and Development Administration) defined the proliferation risk of HEU as follows:

"Highly enriched uranium, when it is in its proper form, is suitable for making nuclear explosives. In the usual forms as a chemical compound, a fuel alloy or a fabricated fuel element, HEU is not directly usable in a nuclear explosive device and would require some chemical or metallurgical conversion. Nevertheless...HEU could be converted and fabricated into a form usable in a nuclear explosive device. It is therefore likely to present a target that is considerably more attractive than low enriched uranium. Because it is not highly radiotoxic prior to irradiation,...HEU may also be a more attractive target than plutonium for a nuclear explosive application."

In 1982, DOE officials said that most HEU abroad was in an irradiated form which was not easily converted into weapons-usable material. Furthermore, they added that only a few

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<sup>8</sup>These materials can be used directly to manufacture nuclear explosive devices. Several other NMMSS materials can be important elements in nuclear devices, but they are only components and are not explosive themselves.



nations had the technical means to recover reusable HEU by reprocessing irradiated fuel. They also pointed out that most HEU had been transferred to close allies and/or signatory nations of the NPT and that the remainder had been dispersed in small quantities among the other recipients. They concluded that the HEU supplied to other countries was not a significant proliferation risk. Nevertheless, in his July 16, 1981, statement of nuclear policy, President Reagan called upon the executive branch "to substitute lower enriched fuels for research reactors at the earliest possible time."<sup>9</sup>

State and ACDA officials have stated that a single seizure of a significant quantity of HEU<sup>10</sup> by an irresponsible government or terrorist group could have profound repercussions on the security of all nations and would certainly have a highly negative impact on peaceful nuclear activities to the detriment of all nations. They believed that the danger was not limited to materials located only in certain "problem" nations because an irresponsible nation or a subnational group might seize materials from even the most responsible nation. They concluded that the danger existed regardless of the political orientation, social system, location, alliance relation, or current nuclear-weapons status of the nations involved and that uranium with lower enrichment levels should be substituted for HEU to the extent possible.

#### OBJECTIVES, SCOPE, AND METHODOLOGY

We had noted some concerns about NMMSS in our 1982 report, and our principal objective in this review was to determine the current status of, and user satisfaction with, NMMSS.

Our work was done in accordance with generally accepted government audit standards. We applied those standards in gathering and analyzing information from a variety of sources, including the U.S. government, U.S. national laboratories, U.S. private industry, and various published reports. Within the U.S. government, we interviewed officials at the Departments of Energy and State, NRC, and ACDA. We visited both the Oak Ridge Operations Office and the NMMSS operation in Oak Ridge, Tennessee. We also visited the Lawrence Livermore National Laboratory in Livermore, California, which is another DOE contractor facility operating a computerized nuclear materials information system. We also met with and/or discussed our work with officials

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<sup>9</sup>In civilian commerce, HEU is normally used only in research reactors.

<sup>10</sup>According to IAEA, 25 kilograms of HEU is a significant quantity, i.e., the approximate quantity it says is needed to manufacture a nuclear explosive device.

of the Exxon Nuclear Fuel Fabrication Facility in Richland, Washington, which reports a large volume of transactions to NMMSS, and the Nuclear Assurance Corporation in Atlanta, Georgia, which provides data to ACDA. In addition, we reviewed reports on various aspects of NMMSS and discussed their results with NMMSS contractor and DOE field and headquarters officials.

We did not comprehensively assess the reliability of NMMSS data, principally because the NMMSS operating programs will be changed by the end of 1984 when the switch is made from a sequential to a random access processing capability, as noted in chapter 3.

## CHAPTER 2

### SOME USERS ARE NOT SATISFIED WITH NMMSS, ALTHOUGH IMPROVEMENTS HAVE BEEN MADE

A number of agencies use the NMMSS national data base. However, some users believe NMMSS data are not sufficiently accurate and adequate for their purposes. Steps have been taken to improve NMMSS but, as discussed in chapter 3, additional efforts are needed to further improve its management and operations.

#### NMMSS USERS

The agencies that use NMMSS most often include: (1) DOE, the primary sponsor, which uses information for domestic and international purposes; (2) NRC, the secondary sponsor, which uses information to satisfy international commitments and to support its licensing and inspection activities; and (3) State and ACDA, which provide no funding but use NMMSS information to assist in policymaking, arms control activities, and fulfilling U.S. international obligations.

NMMSS uses a single data base which is directly linked to many nuclear facilities and to DOE and NRC by telephone. Other recipients of NMMSS data, including State and ACDA, are not directly linked to NMMSS. Officials from both State and ACDA told us that NMMSS is inadequate to meet all their needs due, in part, to the unavailability of certain information.

#### DOE is primary sponsor and user of information

As the primary sponsor, DOE will provide \$2.7 million or almost 71 percent of NMMSS' funding in fiscal year 1984. DOE's responsibilities include conducting nuclear research and development. It also coordinates a safeguards and security program to provide accountability and physical protection of nuclear materials, including research, development, testing, evaluation, and implementation of safeguards systems. Major areas where NMMSS helps accomplish DOE objectives include:

- monitoring nuclear materials import, export, and use controls;
- recording nuclear materials furnished to foreign governments and industries under international cooperation agreements;
- supporting U.S. commitments under the NPT;
- monitoring nuclear materials in government and private facilities and their transportation between facilities;

- managing government-sponsored nuclear research, development, and production programs; and
- administering government uranium enrichment sales activities.

NRC is secondary sponsor of NMMSS

As the secondary sponsor, NRC will provide \$1.1 million or more than 29 percent of NMMSS' funding in fiscal year 1984. NRC primarily uses NMMSS to help satisfy international commitments involving NRC-licensed facilities, support domestic safeguards inspection activities, and respond to information requests. NMMSS provides licensee materials accounting data to NRC. These data come from NRC licensees which are required to report certain specific information to NMMSS.

State and ACDA need information on nuclear materials internationally but find NMMSS incomplete

Decisionmakers within State Department and ACDA need information on international nuclear material transactions involving such items as HEU, plutonium, and spent fuel. Also, information is needed on material retransfers within a country, or group of countries in the case of EURATOM, and how material is accounted for. Officials stated that such information would assist in policymaking and arms control activities. Historically, many government and non-government users of NMMSS-information have tried to get these types of data from NMMSS. NMMSS, however, was not designed to provide such information. International agreements for cooperation in this area do not provide the United States with knowledge of intra-country movements of material. Under these international agreements, the United States has suspended its inspection rights in favor of international safeguards applied by IAEA. Periodically, the IAEA provides the United States with an inventory of materials under U.S. controls in these countries.

One NMMSS generated report that provides information on international transactions is the I-29 report. However, according to State Department officials, NMMSS' I-29 report, which indicates U.S. material supplied overseas, is not useful because it does not identify HEU levels, plutonium produced from U.S.-origin uranium, or spent fuel. They also said that the report is actually detrimental to State because of its seriously misleading nature. According to State, the most important use of NMMSS for State's purpose is in complying with the United States' voluntary commitments under IAEA's Information Circular 207 and the agreement to apply IAEA safeguards to U.S. nuclear activities.

ACDA program officials added that the I-29 report has historically been inaccurate, casting doubt on its usefulness. An ACDA official also noted that NMMSS information is not always available on a timely basis and that ACDA currently lacks easy access to the system. ACDA officials did say, however, that the I-29 report has been useful for general policymaking purposes, and both State and ACDA officials believe a central system such as NMMSS is needed.

#### EFFORTS TO IMPROVE NMMSS ACCURACY

Some of the problems with NMMSS have been long recognized by GAO and others, and various efforts have been made over the years to improve it, especially regarding data accuracy on international transactions.

Shortly after completion of INMITS, internal auditors identified numerous data errors. According to contractor personnel, these errors occurred principally because the initial data entry by DOE was hastily done and standard data entry procedures were not followed. DOE officials believe the errors were more likely due to a lack of information rather than a lack of procedures.

Subsequently, the contractor undertook a backfit project to verify the accuracy of all INMITS data for the period January 1, 1954, to September 30, 1978. This project was completed in late 1982 and resulted in changes to thousands of records in the INMITS data base. We could not determine the extent to which quantity inaccuracies may have existed concerning U.S.-origin nuclear materials in foreign countries because material balance reports based on the original data were not retained. Our work did show, however, that much has been done to correct discrepancies as a result of the backfit project. Although one major user within DOE believes that gaps in the data still exist, we believe there is no way to systematically identify these gaps based on currently available records. A DOE contractor official told us that all transaction data he is aware of have been entered into the records.

In our 1982 report, we noted discrepancies in information on the amounts of HEU spent fuel returned to DOE's Savannah River plant. As a result of these discrepancies, Savannah River officials reexamined the data on HEU spent fuel returns and made adjustments to their records. These adjustments, along with suggestions for changes in NMMSS records, were forwarded to the NMMSS contractor for incorporation in the NMMSS/INMITS system. The adjustments were made as part of the backfit project.

Although INMITS records were corrected as a result of the backfit project, related inaccuracies in the NMMSS international data were not because this would have caused nuclear material book inventories for many domestic facilities to be out of balance. As a result, the NMMSS international inventory data are

of unknown accuracy. The NMMSS contractor is currently correcting the NMMSS international inventory. Completion of this project is expected late in 1984.

One important test of the accuracy of international nuclear materials inventory and transaction data is whether U.S. and foreign countries' records agree. To date, only Australia has reconciled its nuclear material balances with U.S. records, and that reconciliation primarily involved Australian material in the United States as of December 31, 1978. Subsequent reconciliations have dealt with U.S.-origin material in Australia. Since the records did not contain a detailed description of how each item was reconciled, we could not determine the specific adjustments made to U.S. records. However, no major adjustments in enriched uranium quantities were noted. Contractor officials told us that Canada and Sweden have expressed interest in reconciling their records with U.S. records, but neither country has made a commitment to proceed.

Another matter related to data accuracy is the high error rate in the source data received from DOE facilities and contractors. Although these errors are detected by NMMSS data input edit routines, correcting them takes considerable time and effort. February 1984 data collected by the NMMSS contractor showed that the transaction data error rate was about 14 percent, based on input from DOE nuclear facilities.

Data accuracy is also affected by data input preparation. According to a DOE-sponsored study, the turnover rate has been high among personnel who prepare NMMSS input data. Also, changing regulatory and legal requirements for nuclear materials reporting has caused changes in the degree of data input detail. These factors required regular training sessions to explain data input procedures. However, DOE cancelled training sessions for 1983 to conserve funds.

DOE officials noted that the INMTS data can only be as accurate as available source documents permit. The unavailability of current documents (because of international agreements) and historical documents prevents INMTS from being the system its users desire. DOE officials believe that from a historical data perspective the system will not be significantly more reliable even if our recommendations (see chapter 3) are successfully implemented. In the absence of source documents, DOE officials said that country-by-country reconciliations would be necessary to achieve accuracy and completeness of the data. They told us that the accuracy problem will continue to be addressed in the process of reconciling data with foreign governments.

## CONCLUSIONS

NMMSS/INMTS is the most comprehensive U.S. transaction file available on both domestic and international commerce in nuclear

materials. However, it has known limitations, and not all the agencies that use NMMSS are satisfied with it. Some of the dissatisfaction concerns the historic problem of inaccurate data. Steps have been taken to improve NMMSS, including efforts to make it more accurate. However, further work is required to enhance NMMSS' usefulness to those users who need, and can benefit from, a national data base of nuclear transactions. These efforts are discussed in chapter 3 and include steps to address, among other things, users' concerns about timeliness and access.

#### AGENCY COMMENTS

State recognized the limitations on availability within NMMSS of certain information about nuclear materials and the reasons causing the limitations. State noted that information, such as the quantities of plutonium in a given country (whether in spent fuel or separated, or of U.S. or other origin), must be met through other sources.<sup>1</sup>

NRC noted that NMMSS does not receive the necessary data from all foreign countries to provide adequate information about the international status of U.S.-origin nuclear materials. The development of a NMMSS capability to track such material would require additional agreements with recipient countries to provide the needed data.

ACDA stated that the ACDA staff found some of this raw NMMSS data useful for analyses in support of U.S. nonproliferation policy. However, the present output format and system access procedures make it difficult to extract information on the short turnaround times (within a day) frequently required. ACDA went on to say that although NMMSS is not intended to provide information on HEU levels, U.S.-origin plutonium, or spent fuel, it would be worthwhile to explore the possibility of modifying the system to include some of this information.

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<sup>1</sup>We discuss a number of these other sources of information about nuclear materials in our report entitled "Obstacles to U.S. Ability to Control and Track Weapons-Grade Uranium Supplied Abroad" (GAO/ID-82-21, Aug. 2, 1982).

## CHAPTER 3

### FURTHER IMPROVEMENTS ARE NEEDED IN NMMSS MANAGEMENT AND OPERATIONS TO MORE EFFECTIVELY SERVE USERS

DOE management has recognized for several years that improvements are needed in the management and operations of NMMSS in order to more effectively serve users. However, certain improvements have not yet been made.

DOE needs to develop a NMMSS long-range management plan and to improve certain operational features of NMMSS, such as completing a data base management system project that has been underway for several years. DOE also needs to deal with the problem of the age of the NMMSS computer hardware.

### RECOMMENDATIONS FROM PAST EVALUATIONS OF NMMSS HAVE NOT BEEN IMPLEMENTED

Since 1979, DOE and the NMMSS contractor have sponsored various independent studies of how to improve the management and operations of NMMSS. These studies, however, did not benefit NMMSS operations to the extent they could have because many of their recommendations were not implemented. For example, a 1981 report identified several needed improvements, including the need for direct access to NMMSS data. This study, although considered valid by the NMMSS contractor, was not acted on by DOE management. Another comprehensive study, completed in 1982, also identified needed improvements. This study was considered valid by DOE, but certain recommended improvements were not implemented.

In 1983, DOE sponsored another comprehensive study of NMMSS which reexamined some of the same subjects as earlier studies. For example, basic NMMSS issues, such as what data are required, how they are collected, and how they are used, were reexamined. The report was issued in March 1984. Action had not been taken as of August 1984 on its recommendations for improving NMMSS management and operations.

In addition to the recommended improvements which have not been acted on, other recommended efforts, once begun, have made slow progress, with milestone slippage and, in some cases, the withdrawal of previously agreed funding.

### A NMMSS LONG-RANGE MANAGEMENT PLAN IS NEEDED

Presently, there is no long-range management plan for NMMSS which can be used as a basis for approving, controlling, and evaluating activities. Such a management plan is needed to provide a rationale for decisionmaking and for setting priorities



A DOE official told us that a private contractor's study included elements of a NMMSS long-range plan. However, the study is not recognized as a NMMSS plan in DOE. Also, the study is not current and therefore does not reflect changes resulting from a cutback in fiscal year 1984 NMMSS funding.

### Effective NMMSS planning requires organizational changes

The NMMSS management plan should be the final product of an overall planning process which considers the goals and needs of each principal NMMSS user. The eventual effectiveness of any planning effort is heavily dependent on how an agency organizes to accomplish the planning function as well as how the responsibilities for planning are assigned. We believe it is important in a decentralized organization that a central office with automatic data processing (ADP) planning capability have the responsibility and authority to develop and coordinate the proposed management plan, and to implement it after approval, especially when a multi-user information system, such as NMMSS, is involved.

The current organizational structure does not allow for the fully integrated central planning that is needed. Responsibility for overall NMMSS management is under DOE's Office of Safeguards and Security, a major user of the system. At DOE's Oak Ridge Operations Office, the Nuclear Materials Control Division, a major user, has operational oversight responsibility for NMMSS. An Operations Office representative told us that the need for changing the NMMSS organizational responsibilities at ORO has been recently discussed.

In early 1983, DOE placed ADP planning responsibilities under a central office of ADP Management. This is a separate office within DOE which is responsible, among other things, for assuring the appropriate planning, policy, review and approval of management information systems. This office, however, has no cognizance over NMMSS management and operational planning.

Organizations that might be affected when the approved NMMSS management plan is executed should be actively involved in reviewing it prior to approval in order to enhance its chances of successful development and implementation. We believe that one way to accomplish this is to have an executive management or steering committee responsible for seeing that the functional, technical, and financial aspects of NMMSS are included in the plan. User input is particularly important for the eventual effective management of a national data base which is used by different agencies and different units within an agency for numerous and varied purposes.

### IMPROVEMENTS NEEDED IN OPERATIONAL FEATURES

Problems with the current system have prompted efforts by DOE and NRC to upgrade and enhance certain NMMSS operational

features. Improvements that have been identified include (1) direct access capability, (2) automated data input equipment, and (3) a data base management system.

#### Direct access capability for NMMSS data

In 1978, NRC identified the need for more direct access to the licensee data in the NMMSS data base. However, little progress has been made toward providing this capability. This lack of access led, in part, to an NRC plan to develop its own safeguards information system. However, NRC recently abandoned this effort and plans to rely on NMMSS for future nuclear materials information needs. But the access problem remains unresolved.

In September 1981, a task force, established to examine ways to provide NRC with direct access capability, concluded that access was feasible, but that the matter required further analysis. Since that time, several analyses have shown that direct access to NMMSS data is feasible.

A major problem with providing direct access to NMMSS is that it contains both classified and unclassified data. Separating the data base into classified and unclassified parts is difficult since classification of data is established at the facility level rather than the individual record level and is subject to change. Also, many reports draw from data in both classified and unclassified parts of the data base. Thus, a means has to be developed whereby NRC and other users can obtain direct access to only the unclassified portions of the NMMSS data base. One study recommended, and NMMSS contractor officials agreed, that the unclassified portion of the NMMSS data base be put on a separate computer. This solution would provide NRC with direct access to unclassified licensee data while preserving the integrity of the classified NMMSS data base. However, the NMMSS contractor has not validated the cost estimates for providing this capability.

DOE headquarters also identified the need for direct access to NMMSS data to prepare special analyses and reports. Funds were included in the fiscal year 1984 work plan for several NMMSS tasks, including the purchase of work station equipment which would provide DOE some direct access capability. However, these tasks were not funded in fiscal year 1984.

#### Automated data input equipment

Several studies by private contractors have shown that an automated data input system with appropriate edit capability would have an immediate beneficial impact on the initial accuracy of NMMSS data. However, these studies did not identify specific cost estimates for developing this capability.

An automated data input system would allow high volume nuclear facilities to transmit data directly to NMMSS and would

check the accuracy of the data before acceptance by NMMSS. Analyses have shown that this process could significantly reduce data error rates.

DOE planned to accomplish several tasks during fiscal year 1984 related to this need. However, the scope of work for these and other NMMSS tasks was reduced for fiscal year 1984, and \$433,000 was returned to DOE from the NMMSS budget.

A data base management system for NMMSS  
has been developing slowly;  
it needs to be completed

A data base management system (DBMS)<sup>1</sup> could provide significant operational efficiencies for NMMSS, as well as improved timeliness and accessibility for users. The NMMSS contractor selected a DBMS in 1977 after evaluating various DBMS types. The conversion effort, begun in 1979, has been moving slowly. The projected completion date for conversion of NMMSS to a DBMS was September 1982. However, the latest estimate for converting to a DBMS is now December 1984. As of March 1984, the NMMSS contractor had converted the transaction data base to a DBMS and was running it parallel to the old system.

A DBMS for NMMSS has a number of advantages. One study showed that a DBMS could eliminate or reduce data duplication and provide better data management. Also, a DBMS can be used to facilitate and control access to, and use of, the NMMSS data base. A DBMS is more efficient because all files in the NMMSS data base do not have to be sequentially searched to obtain access to the exact data needed. A recent study of the NMMSS system by an independent contractor pointed out that a DBMS has some disadvantages, such as increased run time on the computer to produce routine reports, but that its overall advantages outweigh the disadvantages.

Although fiscal year 1984 funds for NMMSS operation had been reduced pending completion of the latest NMMSS study, the contractor believes that full conversion to a DBMS is vital to NMMSS future usefulness. DOE officials agree.

KEEPING THE NMMSS COMPUTER  
OPERATING IS LIKELY TO  
BECOME INCREASINGLY DIFFICULT

The computer hardware used for NMMSS includes an IBM 360/195 system which was installed in 1973. It is one of only a few still in operation. Because of the system's age, there is an

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<sup>1</sup>A data base management system is a set of instructions to enable the computer to keep track of a data base. The system is able to locate particular items in the data base without sequentially searching the files, and to change the data in the files, if necessary.

ever-present risk that the system may be inoperative for sustained periods in the future because critical replacement parts are not available. Most replacement parts are currently obtained from old, inactive computers that have been scrapped, since many of the replacement parts for this system are no longer manufactured.

The Federal Computer Performance Evaluation and Simulation Center<sup>2</sup> has reviewed the need for replacing the NMMSS computer and has recommended that DOE use both the 360/195 and another computer for classified processing and either lease or purchase an additional computer for unclassified processing. The NMMSS contractor believes that segregating classified data would probably require two computers. DOE started planning for a replacement computer. A requested replacement computer system for the IBM 360/195 was not approved for DOE's fiscal year 1985 budget. DOE officials told us that the replacement computer will be requested again in the fiscal year 1986 budget.

### CONCLUSIONS

Improvements in the management and operation of NMMSS are needed in order for NMMSS to more effectively serve users. While DOE and NRC officials have been aware of these needs as a result of numerous independent studies of NMMSS, a number of changes have not yet been implemented and various ones underway have been progressing slowly.

A long-range management plan for NMMSS is needed. The planning process would provide a comprehensive approach to identifying users' needs and for deciding on an overall approach to upgrading NMMSS equipment and capabilities to more efficiently and effectively meet those needs.

In addition, the organizational and management responsibilities for NMMSS should be reviewed to assess and clarify responsibility and authority for NMMSS planning. The current organizational structure does not allow for the fully integrated central planning that is needed to help establish, direct, coordinate, and review the activities of a large and complex national data base system that serves diverse users.

Moreover, some degree of active involvement in plan formulation is essential for all organizations that might be affected when approved plans are executed. NMMSS could use an executive management or steering committee to assure the consolidation and integration of the functional, technical, and financial aspects of the system into the plan. This approach has the added advantage of allowing the involved parties to rethink their needs and

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<sup>2</sup>An organization in the National Bureau of Standards which, among other things, provides ADP evaluation services to many federal agencies.

how such needs can be met through NMMSS or other nuclear materials data systems. This type of review will lead to a fuller understanding of the capabilities of such systems to meet identified needs.

Finally, NMMSS needs new operational features if it is to improve its service to users. Completion of the DBMS project should be accorded especially high priority. In addition, known computer deficiencies which could affect NMMSS operations should be corrected.

#### RECOMMENDATIONS

We recommend that the Secretary of Energy:

- Develop a NMMSS long-range management plan which allows for top-management involvement by the principal NMMSS users and principal recipients of NMMSS-generated data.
- Establish an interagency steering committee which would be responsible for seeing that the functional, technical, and financial aspects of NMMSS are included in the long-range management plan.
- Complete the DBMS project.
- Evaluate the current organizational responsibilities for NMMSS and implement the specific changes needed to improve planning and operations.
- Review, as part of the planning process and with the assistance of other principle users, the various NMMSS operational improvements that are underway or which have been identified in previous DOE-sponsored studies, and implement those found to be cost effective. This review should consider the improvements from an overall system viewpoint, rather than on an individual basis.

#### AGENCY COMMENTS

DOE agreed that a long-range management plan for NMMSS is needed and noted that a commitment for adequate long-term funding is also necessary. State commented that the recommendations are reasonable and noted that an interagency steering committee could be an effective mechanism for implementing them. ACDA also characterized the recommendations as reasonable and stated its support for an interagency steering committee. ACDA noted that the committee's function should be to examine alternatives for enhancing the effectiveness and efficiency of NMMSS in support of U.S. safeguards obligations, and to explore the possibilities for expanding the applications of NMMSS.

NRC did not comment on our recommendations.

TOTAL U.S. EXPORTS<sup>a</sup>  
(from 1954 to April 30, 1984)

<u>Material</u>	<u>Unit measure (metric units)</u>	<u>Element weight</u>	<u>Isotope weight</u>
Americium - 241	whole gram	159.0	159.0
Americium - 243	whole gram	31.0	31.0
Berkelium	whole microgram	----	3,197.0
Californium	whole microgram	175,036.0	138,424.0
Curium	whole gram	15.0	6.0
Depleted uranium	ton	23,090.0	58.1
Deuterium	ton	3,705.4	744.7
Enriched lithium	whole kilogram	72.0	56.0
Enriched uranium:	ton		
.7110 - 19.999%		17,625.2	483.1
20 - 79.999%		8.9	3.2
80 - 90%		3.1	2.8
more than 90%		11.5	10.7
Neptunium	kilogram	.4	----
Normal Uranium	ton	15.5	----
Plutonium	ton	1.2	1.1
Plutonium - 238	kilogram	1.2	1.0
Plutonium - 242	whole gram	108.0	99.0
Thorium	ton	12.4	----
Tritium	kilogram	.6	----
Uranium - 233	kilogram	72.8	72.4

<sup>a</sup>Figures are based on NMMSS/INMTS data provided by the Department of Energy and have been rounded for use in this appendix. These figures, according to DOE, do not represent inventories, which require inclusion of data on returns, retransfers, use, production, operational losses, and waste production subsequent to the initial exports. The eighteenth material included in NMMSS--Uranium in Cascades--refers to uranium in the process of being enriched; it is not exported in that form.



Department of Energy  
Washington, D.C. 20585

SEP 24 1984

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

Dear Mr. Peach:

The Department of Energy (DOE) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report entitled "The U.S. Nuclear Materials Information System Can Improve Service To Its User Agencies."

We agree that an overall management plan for the Nuclear Materials Management and Safeguards System (NMMSS) is desirable. We believe that NMMSS should be the best accountability system we can devise and that data incorporated therein should be validated and so integrated as to enable it to provide useful reports to all users. We note that GAO believes a long-range management plan is needed and notes that some funding has been withdrawn from NMMSS. We agree with the need for a long-range management plan and feel that a commitment for adequate long-term funding is also necessary.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Martha Hesse Dolan".

Martha Hesse Dolan  
Assistant Secretary  
Management and Administration

GAO NOTE: We have modified the report to reflect information provided by those commenting on the report.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SEP 24 1984

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

Dear Mr. Peach:

This is in response to your letter of August 23, 1984, requesting comments on the draft report, "The U.S. Nuclear Materials Information System Can Improve Service to its User Agencies." The draft report has been reviewed by the Nuclear Regulatory Commission staff. In addition to the general comment below, some suggested changes have been noted on the enclosure.

The draft GAO report indicates that the Nuclear Materials Management and Safeguards System (NMMSS) is not adequate to provide the needed information on nuclear materials internationally. In this regard, as noted in the draft report, the NMMSS does not receive the necessary data from all foreign countries. The development of a NMMSS capability to track U.S. origin material abroad would require negotiation of additional international agreements with export recipients to provide the needed data.

The report, if changed as noted on the enclosure, accurately reflects the information provided by NRC to GAO during the course of this audit.

Should you or your staff wish to discuss the draft report and our comments in more detail, please let us know.

Sincerely,

A handwritten signature in black ink, appearing to read "W. O. Dircks".

William O. Dircks  
Executive Director for Operations

Enclosure:  
As stated

GAO NOTE: We have modified the report to reflect information provided by those commenting on the report.





ASSISTANT DIRECTOR

## UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY

September 27, 1984

MEMORANDUM

TO: Mr. Frank C. Conahan, Director, National Security International Affairs Division, U.S. General Accounting Office

FROM: ACDA/NWC - Archelaus Turrentine, Acting *AT*

SUBJECT: Comments on GAO Draft Report Entitled "The U.S. Nuclear Materials Information System can Improve Service to Its User Agencies"

We welcome the opportunity to provide comments on this report. In general, the report provides an objective review of the current status of the Nuclear Materials Management and Safeguards System (NMMSS) and makes reasonable recommendations which should be explored for improving its efficiency, accuracy and utilization. However, to put ACDA's comments into perspective, it is important to state in the report the reason why NMMSS was established and the specific reporting requirements which NMMSS, as it is now configured, is intended to address.

NMMSS is currently designed to maintain records of transfers of nuclear materials involving US facilities and retransfers of US origin materials between countries outside of Euratom, consistent with our bilateral agreements for nuclear cooperation. It was not intended to maintain a current inventory at foreign nuclear facilities which have US origin material. Further the system is used in complying with the reporting requirements pursuant to the US/IAEA safeguards treaty and US commitments for reporting information to the IAEA on exports and imports of nuclear material in accordance with INFCIRC/207.

In the past, there have been some problems with the timeliness and accuracy of the NMMSS reporting to the IAEA of such information. However, as the GAO report indicates, steps are being taken to correct these deficiencies. We believe that NMMSS is now adequately performing its intended functions. As new US facilities are selected for international safeguards, we feel it will be important to continue

to review the specific requirements for NMMSS reporting to assure that our obligations are being met.

Within the framework of the various functions of NMMSS, ACDA staff found that some of the raw NMMSS data could be useful for analyses in support of U.S. non-proliferation policy. However, the present output format and system access procedures make it difficult to extract such information on the short turnaround times (within a day) frequently required. Thus, the comment attributed to ACDA that NMMSS is not useful because it does not identify HEU levels, US origin plutonium or spent fuel should be placed in the context that although NMMSS is not intended to provide such information, it would be worthwhile to explore the possibility of modifying the system to include some of this information.

Finally, we support the GAO recommendation for establishing an interagency steering committee. We feel that the function of this committee should be to examine alternatives for enhancing the effectiveness and efficiency of NMMSS in support of US safeguards obligations, and to explore the possibilities for expanding the applications of NMMSS.

GAO NOTE: We have modified the report to reflect information provided by those commenting on the report.



United States Department of State  
APPENDIX V

Comptroller

Washington, D.C. 20520

October 4, 1984

Dear Frank:

I am replying to your letter of August 23, 1984, which forwarded copies of the draft report: "The U.S. Nuclear Materials Information System Can Improve Service to Its User Agencies."

The enclosed comments on this report were prepared in the Bureau of Oceans and International Environmental and Scientific Affairs.

We appreciate having had the opportunity to review and comment on the draft report. If I may be of further assistance, I trust you will let me know.

Sincerely,

Roger B. Feldman

Enclosure:  
As stated.

Mr. Frank C. Conahan,  
Director,  
National Security and  
International Affairs Division,  
U.S. General Accounting Office,  
Washington, D.C. 20548

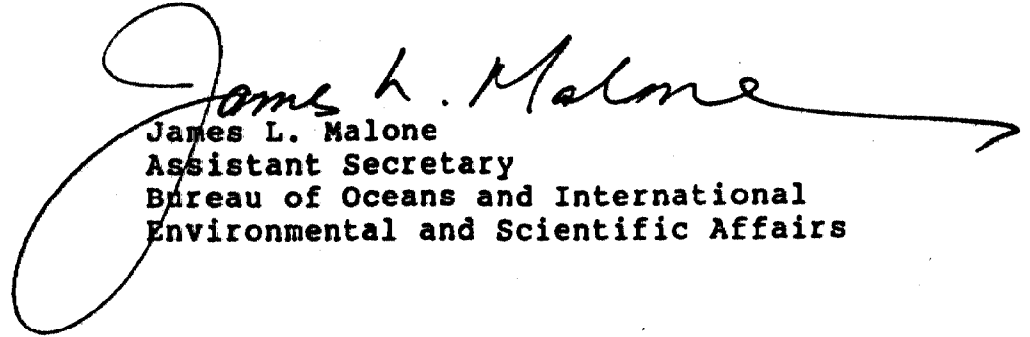
GAO NOTE: We have modified the report to reflect information provided by those commenting on the report.

The U.S. Nuclear Materials Information System  
Can Improve Service to Its User Agencies

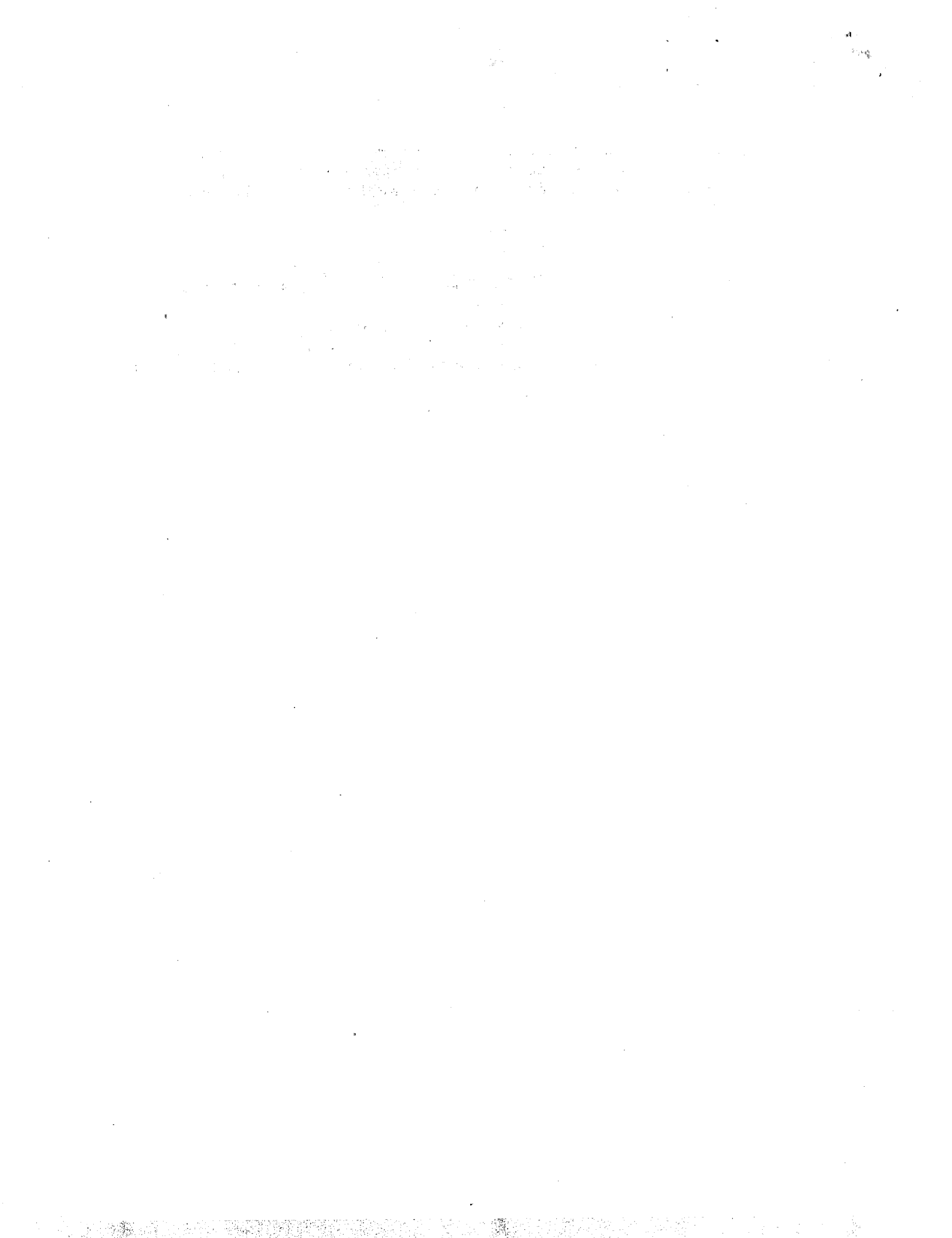
First, we would like to clarify an apparent misunderstanding regarding the State Department's views on the Nuclear Materials Management and Safeguards System (NMMSS). This system maintains records on U.S. nuclear material exports to other countries under the terms of our various agreements for cooperation in the peaceful uses of nuclear energy. It does not maintain records on the current composition, use, and location within another country of all nuclear materials exported by the U.S. Under the terms of those agreements for cooperation this data is not provided to the U.S. (The United States has not given up its bilateral inspection rights under these agreements, as the draft indicates, but rather has suspended implementation of those rights in favor of international inspections performed by the IAEA. U.S. leadership in this area induced other nations to do the same and was a key factor in developing international reliance on the IAEA safeguards system.) Our needs for information such as the quantities of plutonium in a given country (whether in spent fuel or separated, or of U.S. or other origin) must be met through other sources. We would not advocate adding this function to the others performed by NMMSS.

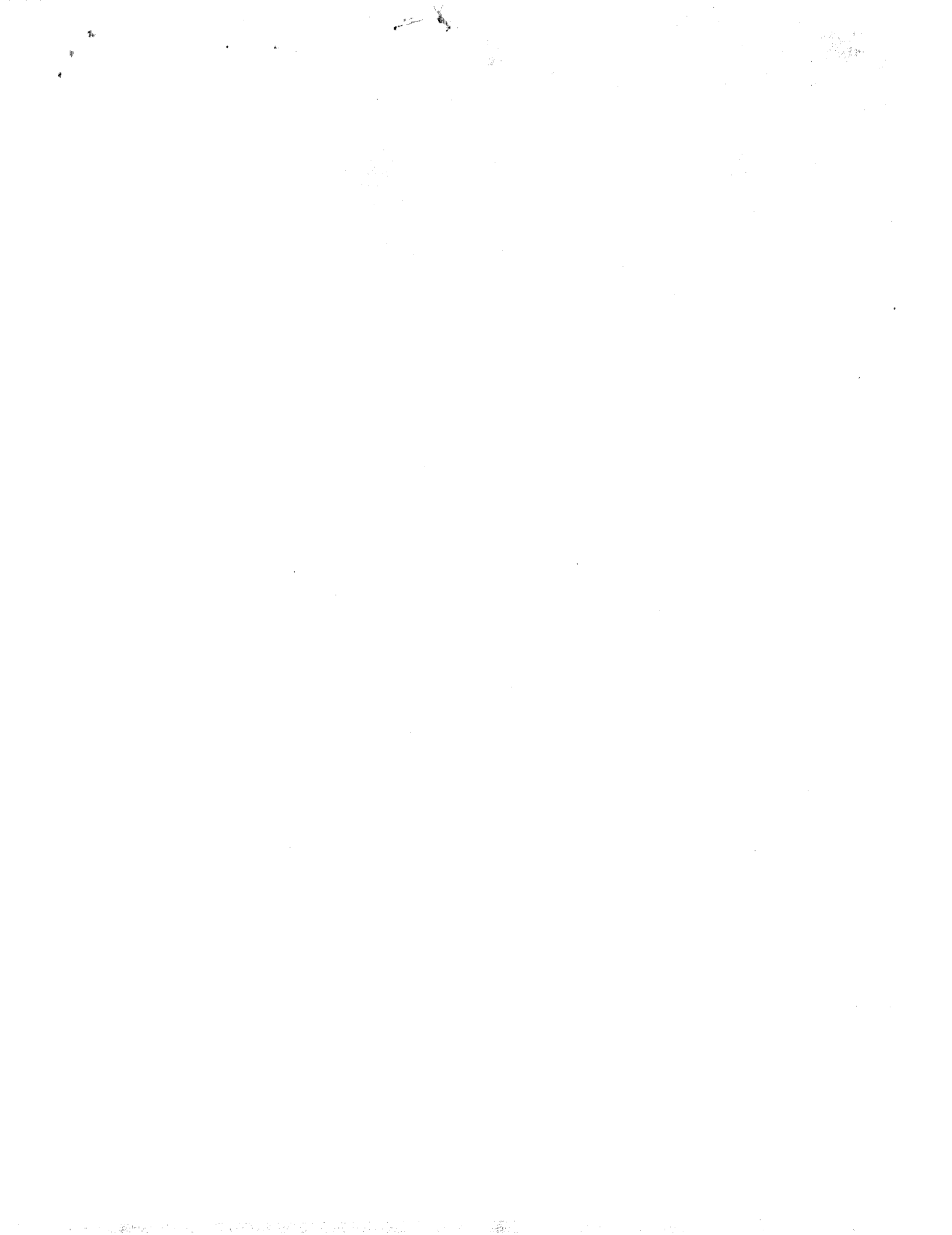
NMMSS performs two functions in support of the Treaty on the Non-Proliferation of Nuclear Weapons and International Safeguards and thus of particular interest to the State Department. These are provision of the nuclear materials transaction and inventory reports required by the US/IAEA Safeguards Agreement (implementing the "U.S. Voluntary Offer") and preparation of the reports of U.S. exports and imports of nuclear materials which the U.S. committed in INFCIRC/207 to provide. We believe that NMMSS is adequately performing these functions. In the past, there have been problems in the timely and correct preparation of the reports required by the US/IAEA Safeguards Agreement. These problems largely stemmed from the basically different accounting philosophies embodied in the U.S. and IAEA systems and are now resolved or in the process of being resolved. However, we believe that they may indicate areas where greater flexibility might be built into the NMMSS as the system undergoes major review and revision.

Finally, we believe that the two recommendations of this report are reasonable and that an interagency steering committee could be an effective mechanism for implementing those recommendations.



James L. Malone  
Assistant Secretary  
Bureau of Oceans and International  
Environmental and Scientific Affairs





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