March 30, 2007

MEMORANDUM TO: Luis A. Reyes
Executive Director for Operations

FROM: Stephen D. Dingbaum/RA/
Assistant Inspector General for Audits

SUBJECT: SUMMARY REPORT AND PERSPECTIVES ON BYPRODUCT MATERIAL SECURITY AND CONTROL (OIG-07-A-12)

This report presents the results of the subject audit. Agency comments provided at the exit conference on October 4, 2006, and in a written response, dated January 12, 2007, have been incorporated, as appropriate, into this report. Appendix B contains a copy of the agency's written comments and Appendix C contains our response.

Please provide information on actions taken or planned on the recommendation contained in this report within 30 days of the date of this memorandum. Actions taken or planned are subject to OIG follow up as stated in Management Directive 6.1.

We appreciate the courtesies and cooperation extended to us by members of your staff during the audit. If you have any questions or comments about our report, please contact me at 301-415-5915, or Tony Lipuma at 415-5910.

Attachment: As stated

ELECTRONIC DISTRIBUTION

Frank P. Gillespie, Executive Director, Advisory Committee on Reactor Safeguards/Advisory Committee on Nuclear Waste
E. Roy Hawkens, Chief Administrative Judge, Atomic Safety and Licensing Board Panel
Karen D. Cyr, General Counsel
John F. Cordes, Jr., Director, Office of Commission Appellate Adjudication
Jesse L. Funches, Chief Financial Officer
Luis A. Reyes, Executive Director for Operations
Janice Dunn Lee, Director, Office of International Programs
Rebecca L. Schmidt, Director, Office of Congressional Affairs
Eliot B. Brenner, Director, Office of Public Affairs
Annette Vietti-Cook, Secretary of the Commission
William F. Kane, Deputy Executive Director for Reactor and Preparedness Programs, OEDO
Martin J. Virgilio, Deputy Executive Director for Materials, Research, State and Compliance Programs, OEDO
Jacqueline E. Silber, Deputy Executive Director for Information Services and Administration and Chief Information Officer, OEDO
Michael R. Johnson, Assistant for Operations, OEDO
Timothy F. Hagan, Director, Office of Administration
Cynthia A. Carpenter, Director, Office of Enforcement
Charles L. Miller, Director, Office of Federal and State Materials and Environmental Management Programs
Guy P. Caputo, Director, Office of Investigations
Edward T. Baker, Director, Office of Information Services
James F. McDermott, Director, Office of Human Resources
R. William Borchardt, Director, Office of New Reactors
Jack R. Strosnider, Director, Office of Nuclear Material Safety and Safeguards
James E. Dyer, Director, Office of Nuclear Reactor Regulation
Brian W. Sheron, Director, Office of Nuclear Regulatory Research
Corenthis B. Kelley, Director, Office of Small Business and Civil Rights
Roy P. Zimmerman, Director, Office of Nuclear Security and Incident Response
Samuel J. Collins, Regional Administrator, Region I
William D. Travers, Regional Administrator, Region II
James L. Caldwell, Regional Administrator, Region III
Bruce S. Mallett, Regional Administrator, Region IV

AUDIT REPORT

Summary Report and Perspectives on
Byproduct Material Security and Control

OIG-07-A-12 March 30, 2007

EXECUTIVE SUMMARY

BACKGROUND

The events of September 11 made it clear that terrorists have the patience and ability to plan and conduct devastating attacks in the U.S. *The National Strategy for Homeland Security* describes terrorists as "strategic actors" who choose their targets deliberately based on the weaknesses they observe in U.S. defenses and preparations, adjust their plans in response to U.S. efforts to close vulnerabilities, and shift their focus to other, exposed vulnerabilities. The strategy also states that terrorists are working to obtain chemical, biological, radiological, and nuclear weapons, and that the knowledge, technology, and materials needed to build such weapons is spreading.

After September 11, NRC acted immediately to begin addressing physical security in the byproduct material program. This included conducting security assessments for a sample of various types of material licensees. NRC also has some on-going efforts that are intended to improve material security.

In February 2005, the NRC Office of Inspector General (OIG) began a review to determine if NRC's oversight of byproduct material provides reasonable assurance that licensees are using the material safely and account for and control material. During 2006, OIG issued three reports related to material tracking and licensing. Also during this timeframe, the Government Accountability Office (GAO) conducted an investigation to ascertain whether radioactive sources could be smuggled across U.S. borders.

PURPOSE

Through this report, OIG seeks to synthesize the findings of previous OIG and GAO reviews and investigations in order to provide a more complete perspective of NRC's approach to byproduct material security and control. The specific objective for this report was to discuss whether NRC has adequately adapted its approach to byproduct material security in the post-September 11 era in accordance with the expectations of congressional and executive policymakers and the American people.

RESULTS IN BRIEF

While NRC has implemented or planned a variety of measures to regulate and provide for the security of byproduct material in the post-September 11 era, the agency, in its approach to byproduct material security, has not adequately identified and evaluated byproduct material security risks. Specifically, the NRC has not conducted an impartial and comprehensive look inwards at its own business and regulatory processes. Consequently, the agency is not aware of potential weaknesses and vulnerabilities in its byproduct material security program. Furthermore, NRC's approach has resulted in an agency policy and some practices that do not consider the full range of potential consequences of a radiological dispersal device (RDD or "dirty bomb").

RECOMMENDATION

This report recommends that the Executive Director for Operations convene an independent panel of experts external to the agency to identify agency vulnerabilities concerning NRC's material licensing and tracking programs and validate the agency's ongoing byproduct material security efforts.

OIG ANALYSIS OF AGENCY COMMENTS

On January 12, 2007, the NRC provided comments concerning the draft audit report and stated its belief that the agency's current participation in an independent, inter-agency Task Force on Radiation Source Protection and Security, as well as security-related actions implemented prior to the formation of the Task Force, meets the objectives of OIG's recommendation. However, the Task Force did not perform a comprehensive vulnerability assessment of NRC material programs. Such an assessment should necessarily include examination of the management, operational, and technical security controls and the extent to which these controls are (1) implemented correctly, (2) operating as intended, and (3) producing the desired outcome with respect to mitigating security vulnerabilities. Furthermore, the Task Force, chaired by the NRC and staffed by members of the agency, was not independent.

Finally, the agency response does not acknowledge the need to perform an impartial, comprehensive review as a measure of self-assurance with regard to unknown vulnerabilities. Appendix B contains NRC's formal comments and Appendix C contains OIG's response to the agency's comments.

ABBREVIATIONS AND ACRONYMS

CBP	Customs and Border Protection
CIA	Central Intelligence Agency
DOD	Department of Defense
DOE	Department of Energy
DHS	Department of Homeland Security
the Act	Energy Policy Act of 2005
FBI	Federal Bureau of Investigation
FSME	Office of Federal and State Materials and Environmental Management Programs
GAO	Government Accountability Office
IAEA	International Atomic Energy Agency
9/11 Commission	National Commission on Terrorist Attacks Upon the United States
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	Nuclear Regulatory Commission
NSIR	Office of Nuclear Security and Incident Response
NSTS	National Source Tracking System
OIG	Office of the Inspector General
RDD	radiological dispersal device
Task Force	Radiation Source Protection and Security Task Force

[Page intentionally left blank.]

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

ABBREVIATIONS AND ACRONYMS iii

I. BACKGROUND 1

II. PURPOSE 5

III. FINDING 6

NRC Efforts to Regulate Byproduct Material Security 6

IV. SUMMARY AND CONCLUSION 18

APPENDIX

A. SCOPE AND METHODOLOGY 21

B. FORMAL AGENCY COMMENTS 25

C. OIG ANALYSIS OF AGENCY COMMENTS 31

[Page intentionally left blank.]

I. BACKGROUND

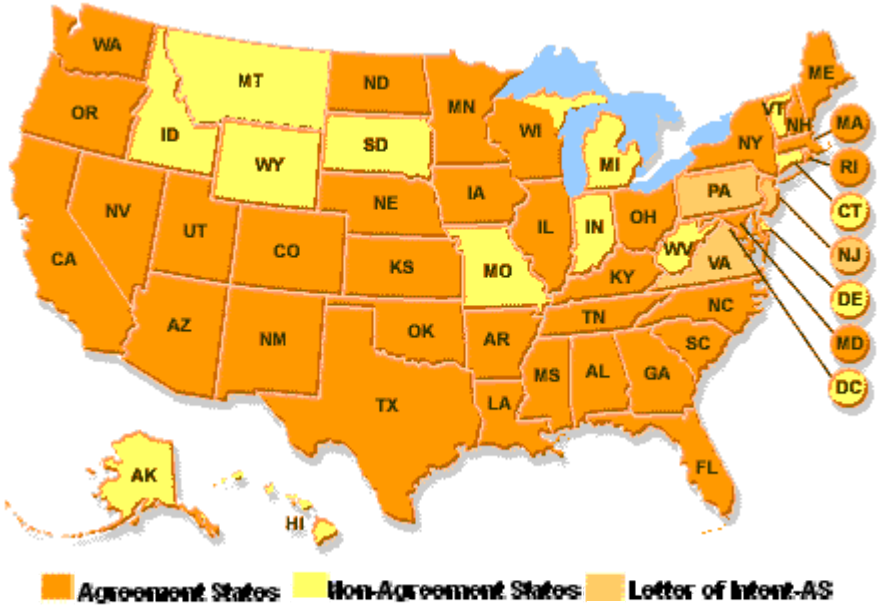
The Nuclear Regulatory Commission's (NRC) mandate to protect public health and safety and the environment, and to provide for the common defense and security, includes regulation of radioactive byproduct material. Byproduct material includes radioactive material generated by or from a nuclear reactor.[1] It is used in medical, academic, and industrial applications, as well as consumer products such as smoke detectors and "exit" signs.

Agreement State Program

In accordance with section 274 of the Atomic Energy Act of 1954, as amended, NRC has relinquished its authority to regulate byproduct material to selected States. The States must first demonstrate that their regulatory programs are compatible with NRC's program and adequate to protect public health and safety. The 34 States which currently have an agreement with NRC to assume this regulatory authority are called Agreement States. The Agreement States, shown in Figure 1 below, administer about 17,450 material licenses, while NRC administers approximately 4,500 such licenses.

[1] The Atomic Energy Act of 1954, as amended, defines byproduct material, as (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material; (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content; (3)(A) any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after the date of enactment of this paragraph for use for a commercial, medical, or research activity; or (B) any material that—(i) has been made radioactive by use of a particle accelerator; and (ii) is produced, extracted, or converted after extraction, before, on, or after the date of enactment of this paragraph for use for a commercial, medical, or research activity; and (4) any discrete source of naturally occurring radioactive material, other than source material, that—(A) the Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and (B) before, on, or after the date of enactment of this paragraph is extracted or converted after extraction for use in a commercial, medical, or research activity.

Figure 1: Agreement and Non-Agreement States



Source: http://nrc-stp.ornl.gov/ [as of March 2007]

Byproduct Material Safety and Security

Responsibility for byproduct material safety and security is shared among several organizations in NRC. These include the Office of Nuclear Material Safety and Safeguards (NMSS), the Office of Nuclear Security and Incident Response (NSIR), the Office of Federal and State Materials and Environmental Management Programs (FSME), and NRC's regional offices.

NRC Management Directive 9.26 spells out NMSS' responsibilities to regulate material licenses.[2] Among other things, the directive authorizes the NMSS Director to prescribe license conditions and recommend rules and regulations for safety, material accounting, and physical security measures amongst U.S. material licensees.

In 2002, NRC created NSIR to consolidate certain safeguards, security, and incident response functions under one organization, including some security functions previously under NMSS. According to NSIR's Web page on the NRC intranet, its mission is "to prevent nuclear security incidents and prepare for and respond to safety and security events." Essentially, NSIR is the lead NRC

[2] Management Directive 9.26, Chapter NRC-0124, "Organization and Functions, Office of Nuclear Material Safety and Safeguards," October 27, 1989.

organization for security in the byproduct material program, and NMSS and NRC's regional offices are the lead organizations for safety.

NMSS and the Agreement States have assumed responsibility for many byproduct materials under NRC's public health and safety authority[3] and are responsible for knowing who and where the licensees are. The NRC regional offices are responsible for implementing any security changes to the license review and inspection process developed by NSIR and issued by NMSS. License reviewers and inspectors in the regional offices are the eyes and ears of the agency, interacting with licensees and the material user community.

FSME was established as part of an agency reorganization on October 1, 2006. It has been charged with developing and implementing rules and guidance for the safe and secure use of source, byproduct, and special nuclear material. This includes providing and updating guidance on material licensing and inspection in the regions. It also has responsibility for all safety and security interface issues between NRC and the Agreement States.

Byproduct Material and the Dirty Bomb

The terrorist attacks of September 11, 2001, heightened the Nation's concerns that the loss or theft of radioactive material could lead to malicious use in a radiological dispersal device (RDD). An RDD, also known as a dirty bomb, is a conventional explosive that incorporates radioactive material and releases it on detonation. The major purpose of a dirty bomb is to create terror and disruption, not to cause death by radiation.

There is widespread agreement in the Federal Government regarding the threat and effects of a dirty bomb. In a June 2003 press release, the White House stated, "There is growing concern that terrorists or the states which support them could acquire radioactive sources to construct dirty bombs. Detonation of a dirty bomb could harm civilians and result in severe economic costs."[4] For example, a September 2005, *BusinessWeek Online* article postulated that the economic losses from a dirty bomb exploded outside the New York Stock Exchange could reach $1 trillion. The threat posed by a potential dirty bomb is also reflected in a

[3] While Agreement States have authority to license byproduct material in their respective states, the Atomic Energy Act of 1954, as amended, prevents the NRC from delegating "common defense and security" authority to Agreement States.

[4] The White House Office of the Press Secretary, *Countering "Dirty Bomb" Threat Fact Sheet*, June 2, 2003.

Department of Homeland Security (DHS) one-page "Radiation Threat" visual guide, which pictorially depicts blast and protection information related to the detonation of a dirty bomb.

The events of September 11 made it clear that terrorists have the patience and ability to plan and conduct devastating attacks in the United States. *The National Strategy for Homeland Security* describes terrorists as "strategic actors" who choose their targets deliberately based on the weaknesses they observe in U.S. defenses and preparations; adjust their plans in response to U.S. efforts to close vulnerabilities; and shift their focus to other, exposed vulnerabilities. The strategy also states that terrorists are working to obtain chemical, biological, radiological, and nuclear weapons, and that the knowledge, technology, and materials needed to build such weapons is spreading.

Following September 11, 2001, it became clear that governmental institutions with a defense or security mission should evaluate and transform—or adapt—their business approaches and missions to address the threats posed by terrorists. This transformation philosophy was conceptualized by the President in September 2002 in *The National Security Strategy of the United States of America* which stated "The major institutions of American national security were designed in a different era to meet different requirements. All of them must be transformed."

NRC Measures to Secure Material

NRC has implemented a variety of measures to improve the Nation's security of radioactive material. After the events of September 11, NRC acted immediately to begin addressing physical security in the byproduct material program. This included conducting security assessments for a sample of various types of material licensees. In October 2001, NRC issued advisories to material licensees that emphasized the importance of the security and control of licensed material. In the weeks, months, and years after September 11, NRC also issued security-related orders to the largest material licensees. These orders addressed potential vulnerabilities in storage, transportation, and access of byproduct material among the licensees.

NRC also has some on-going efforts that are intended to improve material security. These include continuing development of a National Source Tracking System (NSTS), distributing pre-licensing

guidance to the Regions and Agreement States, developing a rulemaking on background checks required of certain licensees, and sharing licensee information with other Federal agencies.

The Radiation Source Protection and Security Task Force

The Energy Policy Act of 2005 (the Act) established a multi-agency task force on radiation source protection and security (Task Force) with the NRC Chairperson or a designee as chair. The Task Force is required to evaluate and provide recommendations relating to the security of radiation sources in the United States from potential terrorist threats, and present its findings in a report within 1 year of passage of the Act and every 4 years thereafter.

The first Task Force report, released August 15, 2006, identified the key accomplishments of the U.S. Government related to the security of radioactive materials in use, storage, or transport. The Task Force concluded that "since September 11, 2001, Federal Agencies have implemented or are in the process of implementing actions to increase security. While implementation of some of these activities is still in progress, the actions taken to date have substantially enhanced security."

II. PURPOSE

In February 2005, the NRC Office of the Inspector General (OIG) began a review to determine if NRC's oversight of byproduct material provides reasonable assurance that licensees are using the material safely and account for and control material. During 2006, OIG issued three reports related to material tracking and licensing. Also during this timeframe, the Government Accountability Office (GAO) conducted an investigation to ascertain whether radioactive sources could be smuggled across U.S. borders. The GAO work culminated in a March 2006 congressional hearing to discuss the results of the investigation.

Through this report, OIG seeks to synthesize the findings of those reviews and investigations in order to provide a more complete perspective of NRC's approach to byproduct material security and control. In preparing the report, OIG conducted follow-on audit work and developed an additional recommendation to reflect this more complete perspective. The specific objective for this report was to discuss whether NRC has adequately adapted its approach to byproduct material security in the post-September 11 era in accordance with the expectations of congressional and executive policymakers and the American people.

III. FINDING

NRC Efforts to Regulate Byproduct Material Security

While NRC has implemented or planned a variety of measures to regulate and provide for the security of byproduct material in the post-September 11 era, the agency has bypassed an important step in doing so. After the terrorist attacks of September 11, 2001, the Federal Government expected governmental institutions to evaluate and adapt their missions and security approaches to address threats posed by terrorists. However, NRC has not fully adapted its approach to byproduct material security, because the agency has not taken the step to adequately identify and evaluate security risks in the byproduct material area. Specifically, the agency has not conducted an impartial and comprehensive look inwards at its own business and regulatory processes. The agency also lacks an independent perspective to assess the security measures in place. Consequently, NRC's approach has resulted in an agency policy and some practices that do not consider the full range of potential consequences of a dirty bomb.

Government Agencies Are Expected to Evaluate and Adapt Missions

In the wake of the terrorist attacks of September 11, 2001, governmental institutions were expected to evaluate and adapt their missions to address the threats posed by terrorists. Expectations to adapt agency missions have come from the highest levels of the Federal Government as embodied in National Strategic documents and Presidential Directives. For example, the *National Strategy for Homeland Security*,[5] published in July 2002, described securing the American homeland as the U.S. Government's most important mission, requiring a coordinated and focused effort from the entire American society. In *The National Security Strategy of the United States of America,*[6] published in September 2002, the President stated "The major institutions of American national security were designed in a different era to meet different requirements. All of them must be transformed."

[5] The White House Office of Homeland Security, *National Strategy for Homeland Security*, July 2002.
[6] The President of the United States, *The National Security Strategy of the United States of America*, September 2002.

Since September 2001, Federal efforts to transform or adapt agencies' security-related missions include:

- Establishment of the Department of Homeland Security (DHS) by bringing 22 Federal entities with roles to play in protecting our Nation and preventing terrorist attacks under its authority.

- Establishment of the Office of the Director of National Intelligence, which was endowed with expanded budgetary and personnel authorities to integrate the efforts of the intelligence community—including the Central Intelligence Agency (CIA) and the Federal Bureau of Investigation (FBI)—into a more unified and coordinated whole.

- Initiation of a Department of Defense (DOD) transformation effort to better balance its capabilities across several categories of challenges, including meeting the threats of terrorism and the use of weapons of mass destruction by state and non-state actors.

The Federal Government also places a priority on keeping radiological weapons technology away from terrorists. In 2003, the President's *National Strategy for Combating Terrorism*,[7] stated that the probability of a terrorist organization using a chemical, biological, radiological, or nuclear weapon, or high-yield explosives, has increased significantly during the past decade. It concluded that preventing terrorist groups from gaining access to such technology will be one of the country's highest priorities. Also in 2003, a Homeland Security Presidential Directive titled *Critical Infrastructure Identification, Prioritization, and Protection* directed DHS to continue to work with NRC to ensure the necessary protection of nuclear material in medical, industrial, and academic settings and facilities that fabricate nuclear fuel; and the transportation, storage, and disposal of nuclear material and waste.

By March 2006, the *National Security Strategy* was updated to, among other things, clarify the President's expectations that transformation and adaptation efforts be extended to key domestic institutions. The President's expectations require that agencies with traditional domestic functions, like NRC, increasingly play a

[7] The President of the United States, *National Strategy for Combating Terrorism*, February 2003.

role in foreign and security policies. NRC has an important security role in protecting nuclear materials. This security role is reflected in the agency's strategic plan as a discrete goal: "Ensure the secure use and management of radioactive materials."

As a greater number of Federal agencies adapt their approaches to meet the expectations presented in the March 2006 *National Security Strategy*, the importance of intergovernmental cooperation and coordination becomes apparent. This concept was recognized by the National Commission on Terrorist Attacks Upon the United States, also known as the 9/11 Commission. In its 2004 report, the 9/11 Commission made recommendations that would "require a government better organized than the one that exists today" in order to "build unity of effort across the U.S. government."

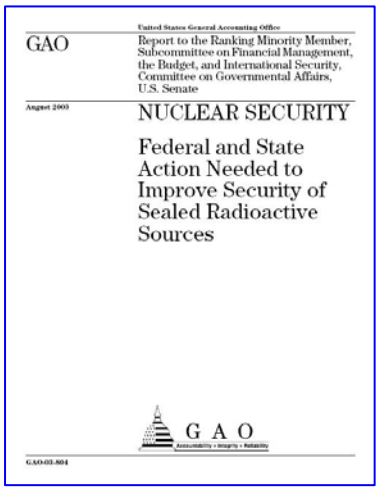
NRC Has Not Fully Adapted Its Byproduct Material Security Approach

NRC has not fully adapted its byproduct material security approach to accommodate changes in threats to the Nation. OIG made this conclusion on the basis of findings reached in previous OIG and GAO reports on byproduct material security. From this body of work, two primary areas of concern in the agency's approach have emerged: 1) NRC has not identified or closed all security gaps in its material licensing process, and 2) NRC does not currently track all dangerous byproduct material. Moreover, some individual members of Congress—on a bipartisan basis—have observed that NRC has not done enough with regard to material security and has not fully adapted to the post-September 11 threat environment.

NRC Has Not Identified or Closed Gaps in Its Material Licensing Process

Both OIG and GAO have performed reviews of NRC's material licensing process and have found security gaps and other shortcomings in the program. Some of the security gaps in NRC's licensing process remain and compromise material security.

In August 2003, GAO reported that NRC's licensing process left sealed sources[8] vulnerable because NRC's licensing procedures do not require inspection of a licensee's facilities before issuance of a license.[9] GAO thus recommended that NRC modify its process of issuing specific licenses to ensure that sealed sources cannot be purchased before NRC's verification, through inspection or other means, and that the material will be used as intended. NRC stated that it agrees with the objective of the recommendation. In December 2006, the agency issued pre-licensing review guidance for Agreement State and NRC Regional license reviewers. NRC officials believe that this guidance addresses the vulnerability identified by GAO. The GAO recommendation remains open, but GAO is currently reviewing NRC's pre-licensing guidance as part of a follow-on job commenced in September 2005.


United States General Accounting Office

GAO

Report to the Ranking Minority Member, Subcommittee on Financial Management, the Budget, and International Security, Committee on Governmental Affairs, U.S. Senate

August 2003

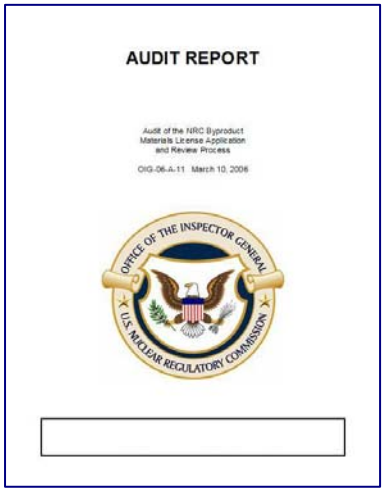
NUCLEAR SECURITY

Federal and State Action Needed to Improve Security of Sealed Radioactive Sources

GAO

GAO-03-804

In March 2006, OIG reported that NRC officials were not aware of all the potential security gaps in the byproduct material license application and review process.[10] This lack of awareness was attributed to NRC's failure to take a comprehensive look inwards at its own business and regulatory processes, which would include conducting vulnerability assessments of the license application and review process. As a result, individuals with malevolent intentions could exploit vulnerabilities in the license application and review process to obtain byproduct material for use in a dirty bomb.


AUDIT REPORT

Audit of the NRC Byproduct Materials License Application and Review Process

OIG-06-A-11 March 10, 2006

OFFICE OF THE INSPECTOR GENERAL

U.S. NUCLEAR REGULATORY COMMISSION

In a March 28, 2006, testimony statement before the U.S. Senate Committee on Homeland Security and Governmental Affairs, Permanent Subcommittee on Investigations, GAO reported on an investigation it had conducted to transport radioactive material into

[8] A sealed source is radioactive material that is permanently sealed in a capsule or closely bonded in a solid form.

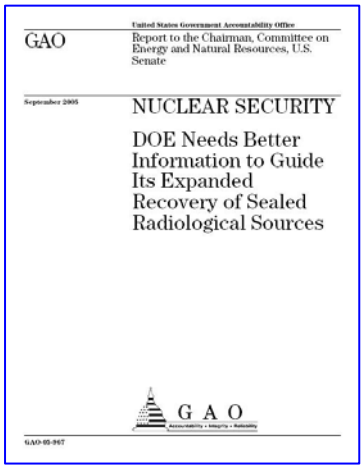
[9] GAO, *Nuclear Security: Federal and State Action Needed to Improve Security of Sealed Radioactive Sources*, GAO-03-804 (Washington, D.C.: August 6, 2003).

[10] NRC Office of the Inspector General, *Audit of the NRC Byproduct Materials License Application and Review Process*, OIG-06-A-11 (March 10, 2006).

the United States across the northern and southern borders.[11] The GAO developed counterfeit bill-of-lading and counterfeit NRC documents to accompany the transport of the material. It is uncertain whether the NRC documents were required to accompany the shipment. Nevertheless, the U.S. Customs and Border Protection (CBP) officers at the border inspected the NRC documents and could not detect that the documents were fraudulent. Moreover, as OIG reported earlier,[12] NRC documents are used by licensees for other purposes, and it is important that regulators and material manufacturers and distributors have a way to verify the legitimacy of such documents.

NRC Does Not Track All Dangerous Byproduct Material

As OIG and GAO have previously reported, NRC does not currently track all dangerous radioactive byproduct material, representing another gap in the agency's approach to material security. The International Atomic Energy Agency (IAEA) developed a categorization system that provides a relative ranking and grouping of radioactive sources. While the IAEA classifies sources into 5 categories, it notes that sources in Categories 1 through 3 are designated as varying degrees of dangerous. Yet, NRC is not currently tracking Category 3 sources and cannot today accurately account for the current location of all dangerous sources.



NRC has proposed a system to track radioactive byproduct sources, yet experts have identified areas where the proposal falls short of enhanced public health and safety and security goals. NRC's proposed National Source Tracking System (NSTS) has not yet been deployed, but the agency plans for it to be a Web-based system that will contain cradle-to-grave information on high-risk sealed sources. According to the Task Force report, NRC is developing the NSTS to track Category 1 and 2 sources, plus three additional radionuclides of interest to the Department of Energy (DOE). In September 2005, GAO found that, as proposed, the NSTS would be of little use to DOE in its efforts for the recovery and disposal of unwanted sealed

[11] GAO, *Border Security: Investigators Transported Radioactive Sources Across Our Nation's Borders at Two Locations*, GAO-06-583T, Testimony Before the Permanent Subcommittee on Investigations, Committee on Homeland Security and Governmental Affairs, U.S. Senate, March 28, 2006.
[12] OIG-06-A-11.

radiological sources, largely because the proposed NSTS will not track beyond Category 2 sources.[13] According to the GAO report, the aggregate radioactivity of co-located individual sources poses enough of a safety and security risk to warrant their recovery by DOE, but the sources will not be tracked in NSTS because they are not Category 1 or 2 sources. Also, in September 2005, the Health Physics Society[14] noted shortcomings in the proposed NSTS due to NRC's failure to include Category 3 sources.

The Commission decided that until the NSTS is implemented,[15] NRC will maintain an inventory of sources at or above Code of Conduct Category 2 values in an Interim Database that will be updated annually. In other words, until full implementation of NSTS, NRC will have only an annual snapshot of the inventory of licensees permitted to possess the most dangerous sources. In addition, NRC has not undertaken any inspection efforts to validate the accuracy of information reported to the NRC.

On June 9, 2006, the Commission directed the staff to perform a one-time NSTS data collection and analysis of sources.[16] The Commission said that the staff should collect these data to support two objectives. The first objective is to provide analysis that would support a proposed rule that would include Category 3 sources in the NSTS. As the staff stated in an issue paper to the Commission, the primary objective of this activity would be to determine the numbers of Category 3 licensees, sources, and transactions. The Commission's directions to the staff stated that a formal rulemaking plan is not required, but that the staff should plan to complete the expansion of the NSTS within 3 years. The second objective is to evaluate the Category thresholds for general licenses to determine if some generally-licensed byproduct material should be specifically licensed down to the Category 3.5 level.[17]

Congressional Criticism of NRC Material Security Efforts

Selected U.S. Congressional observations suggest that NRC has not done enough with regard to material security and has not fully adapted to the post-September 11 threat environment.

[13] GAO, *Nuclear Security: DOE Needs Better Information to Guide Its Expanded Recovery of Sealed Radiological Sources*, GAO-05-967 (Washington, D.C.: September 22, 2005).
[14] The Health Physics Society is an independent scientific organization of radiation safety professionals.
[15] According to the Task Force report, an initial, basic version of NSTS is currently expected to go online in spring 2007, with a more advanced, second release expected in winter 2007/2008.
[16] Memorandum, A. Vietti-Cook to L. Reyes, re: *Staff Requirements – SECY-06-0094, Tracking or Providing Enhanced Controls for Category 3 Sources*, dated June 9, 2006.
[17] According to an NRC manager, an analysis down to Category 3.5 would include all Category 3 sources and the top one-tenth, based on activity, of Category 4 sources.

Congressional concern has been chronicled via proposed legislation, hearings, correspondence with the Commission, and requests for GAO reviews.

One way to gauge congressional concern is by tracking the legislation proposed in both the House and Senate. Since October 2001, members of Congress have submitted no fewer than 50 bills that, in whole or in part, addressed issues and concerns related to dirty bombs.[18] Of these, 16 bills included language that would specifically require NRC to improve its oversight of or take additional security measures to protect radioactive byproduct material.[19]

During the same period, Congress held numerous hearings on terrorism and dirty bombs. Some of these hearings included testimony that specifically addressed NRC's oversight of security for dangerous radioactive material that could be used in a dirty bomb. For example, a National Academy of Sciences Director testified before a House Homeland Security Subcommittee in September 2005, his expectations that NRC will soon put stronger procedures in place for ensuring proper handling and security of radioactive material.[20]

Most recently, in March 2006, Senate Homeland Security and Governmental Affairs Subcommittee members responded to written and verbal hearing statements from a number of witnesses regarding a GAO investigation. GAO testified before the subcommittee about the ease with which NRC documents accompanying material brought across U.S. borders could be falsified.[21] In verbal testimony at the hearing, GAO also explained how a patient entity could acquire enough dangerous material to build a dirty bomb without attracting attention from NRC. During this hearing, a Senator stated that "the NRC must reform the processes by which anyone can acquire radiological material." Another Senator observed problems with NRC's documentation

[18] The number of bills counted by OIG reflects some duplication of separate bills proposed in both the House and the Senate. Furthermore, some bills proposed during the 107th Session of Congress were reintroduced for the 108th and/or the 109th Sessions of Congress.

[19] These bills include the Energy Policy Act of 2005, which, in July 2005, was approved by the U.S. House of Representatives by a vote of 275 to 156 and in the U.S. Senate by a vote of 74 to 26.

[20] Schweitzer, Glenn E., Director for Central Europe and Eurasia, National Academy of Sciences, *The Nexus of International Organized Crime and Terrorism: The Case of Dirty Bombs*, Testimony to the Subcommittee on Prevention of Nuclear and Biological Attacks of the Committee on Homeland Security, U.S. House of Representatives, September 22, 2005.

[21] GAO-06-583T.

and licensing that were identified in 2003 and which, according to GAO's testimony, remain a problem to this day. The Senator referred to NRC's failure to implement corrective regulations as "shocking."

Since 2001, selected members of Congress have corresponded directly with NRC to express concerns with NRC's efforts to better oversee the security of radiological material. During a 3-month period in 2006, several members of Congress wrote to NRC to question a number of the agency's material security decisions. Among other concerns, members have made the following specific observations:

- NRC has failed to implement selected material security-related sections of the Energy Policy Act of 2005 in a timely manner;

- NRC's commitment to implementing future required material security regulations is questionable; and

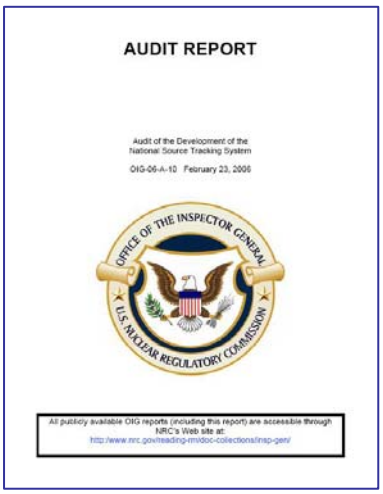
- NRC has failed to establish a program and a database to verify the authenticity of NRC licensing documents.

OIG also reviewed Congressional requests submitted to GAO for proposed audits and investigations. A recent request from a Senate Committee Chair and Ranking Member stated in an April 27, 2006, letter to GAO that NRC's standards appear to be inconsistent with standards used by other Federal agencies to assess the security and health risks posed by radioactive sources. In the letter, the members requested GAO to examine NRC's material security efforts and progress since 2003 on GAO's previous recommendations and on its licensing database. The members also requested GAO to review NRC's coordination with other agencies, including efforts to reconcile inconsistencies with other Federal standards guiding the purchase, use, and transportation of radioactive material.

NRC Has Not Fully Identified and Evaluated Risks

Based on two OIG byproduct material reports published in 2006, OIG concluded the NRC has not fully identified and evaluated security risks in the byproduct material area. Specifically, the agency had not conducted adequate analyses in its NSTS and material licensing programs.

In February 2006, OIG reported that the proposed NSTS may be inadequate because NRC did not consider a variety of factors when the agency conducted a regulatory analysis for NSTS.[22] A regulatory analysis provides the framework for making regulatory decisions. The factors not initially considered by NRC's regulatory analysis for NSTS and the resulting security risks that NRC took by removing the factors from consideration for the NSTS are summarized in the table below.


AUDIT REPORT

Audit of the Development of the National Source Tracking System

OIG-06-A-10 February 23, 2006

OFFICE OF THE INSPECTOR GENERAL

U.S. NUCLEAR REGULATORY COMMISSION

All publicly available OIG reports (including this report) are accessible through NRC's Web site at:

http://www.nrc.gov/reading-rm/doc-collections/insp-gen/

Table 1: NSTS Factors Not Initially Considered by NRC's Regulatory Analysis and Related Security Risks

Factor not considered	Related security risk
Tracking beyond Category 2 — NRC did not consider the number of sources located in the United States for Category 3 to 5 sources.	All material designated as "dangerous," which includes Category 3, would not be tracked.
Aggregation of sources — NRC did not consider the co-location of radioactive sources to determine if their aggregate curie activity would qualify the material at the next highest IAEA Category.	NSTS would provide no oversight of material that, when aggregated, would pose the same or greater threat than the Category 1 or 2 material that would be tracked or the Category 3 sources that are currently not being tracked.
Malevolent uses of dangerous sources — NRC did not consider the diversion of radioactive material from legal to illegal and criminal uses.	NSTS features could be designed without the benefit of knowing the specific ways that sources could be diverted to malevolent use.

Source: OIG analysis.

NRC has since stated that NRC staff intends to begin the process to evaluate the need, benefits, and costs to tracking Category 3 sources. However, there is no specific timeline for when, how many, or even if any Category 3 sources would be tracked by NSTS.

OIG also found that material license application review officials were not aware of all the potential security gaps in the program because the agency had failed to look inwards at its own business and regulatory processes. OIG thus recommended that NRC conduct a vulnerability assessment of its license application and review process and the methods used by licensees to purchase

[22] NRC Office of the Inspector General, *Audit of the Development of the National Source Tracking System*, OIG-06-A-10 (February 23, 2006).

byproduct material from sellers. NRC stated that it is committed to completing an effectiveness review of its actions and does not believe that the additional reviews suggested by OIG's recommendations are necessary at this time. However, a post-implementation effectiveness review of security actions to address known vulnerabilities would not help program officials become aware of *unknown* vulnerabilities. That is because an effectiveness review would only analyze actions taken to address known vulnerabilities, rather than uncover other, previously unknown vulnerabilities. Currently, OIG's recommendations remain unresolved.

The OIG reports illustrate two instances where the agency moved forward with security-related program actions without conducting a rigorous analysis to justify the actions. When questioned by Government auditors or elected officials about the bases of its security-related actions or about its efforts to identify and close vulnerabilities in its material licensing and tracking programs, NRC has consistently pointed to a "graded, risk-informed" approach to byproduct material security. For NRC, the "graded, risk-informed" approach results in the identification of "risk-significant" or "high-risk" sources, equivalent to IAEA Category 1 and 2 sources.

NRC's "graded, risk-informed" approach discounts factors related to malevolent terrorist intentions because the agency focuses the performance of its mission—including those related to common defense and security—to scientific and engineering evaluations of licensed activities that use radioactive material. Indeed, the agency notified the House Committee on Government Reform that factors—such as psychological, social, and economic effects—can vary and provide a less stable measure for establishing security measures.[23] By its very definition, such an approach would discount the intentions and capabilities of a malevolent entity bent on obtaining byproduct material that could be used in a dirty bomb.

OIG has concluded that NRC's approach to identifying byproduct material security requirements lacks an independent perspective of a credible organization such as the National Academy of Sciences, particularly with regard to assessing agency programs for potential weaknesses. For example, an independent panel of experts convened externally from the agency could identify agency vulnerabilities according to potential consequences and risks. The findings of such an independent body could help validate or provide suggested improvements for the agency's ongoing byproduct

[23] Letter from NRC Chairman Nils J. Diaz to The Honorable Thomas Davis, Chairman, Committee on Government Reform, U.S. House of Representatives, February 4, 2004.

material security efforts.

NRC's Approach Leads to a Policy and Some Practices That Do Not Consider All Dirty Bomb Consequences

Consistent with its byproduct material approach, NRC has developed a byproduct material security policy and some practices that may allow for consequences that are inconsistent with other interests. Of particular significance is an NRC policy for evaluating the risk of dirty bombs that does not recognize all of the potential effects of a dirty bomb. Moreover, the NRC staff's approach does not reflect a post-September 11 stance.

NRC Policy Does Not Recognize All Effects of a Dirty Bomb

During its recent review of NRC's oversight of byproduct material and sealed sources, OIG became aware of an NRC policy for evaluating the risk of dirty bombs that does not recognize all of the potential effects of a dirty bomb. The staff proposed, in a November 2004 issue paper, a new NRC policy for assessing the effectiveness of security measures of material licensees based on "prompt fatalities" consequences only. The Commission approved the staff's proposal, hereafter referred to as the "prompt fatalities" policy. The policy established a "decision-making framework" for vulnerability assessments of material licensees to judge the effectiveness of future security measures.

A subsequent issue paper submitted to the Commission on March 1, 2006, documented the agency's extensive use of the decision-making framework to evaluate the security vulnerability of various material and research and test reactor licensees. The staff reported that:

> "the security measures already taken by the Commission are sufficient to ensure adequate protection of the public and promote common defense and security."

Essentially, the staff expressed confidence in their security measures without the benefit of knowing all of the potential vulnerabilities that would have resulted from a comprehensive look inwards at its own business and regulatory processes. Had consequences of a dirty bomb other than prompt fatalities been considered—including the technical, socioeconomic, psychological, environmental, and other effects—the results of the decision-making framework might have been different and required different or possibly additional security measures to secure byproduct

material. Conversely, measuring dirty bomb consequences without consideration of these additional consequences causes the NRC to understate the risk these weapons pose to national security. For example, when asked about the socioeconomic effects of accounting for radioactive sources in NRC's security decision-making, an NMSS manager stated that NRC is a scientific agency and really cannot take the socioeconomic impacts into account.

In addition, the "prompt fatalities" policy, as written, does not accord with DHS' draft *Sector-Specific Plan Nuclear Reactors, Materials and Waste for Critical Infrastructure Protection as Input to the National Infrastructure Protection Plan*, published in July 2004 and updated on June 8, 2006. According to the draft plan, DHS uses several processes to analyze the consequences of potential terrorist attacks across the various parts of the nuclear sector. These include health, governance, economic, and psychological impacts. The draft plan states that the use of radioactive material in an unconventional attack via a dirty bomb is widely recognized to have a greater likelihood of physical and social disruption than of lethal radiological consequences; however, the psychological and economic consequences of dispersal could be high. As an NSIR senior manager concluded in December 2004, the prompt fatalities framework "does not appear to meet these objectives."

Staff Approach Does Not Reflect a Post-September 11 Stance

During its recent review of NRC's oversight of byproduct material and sealed sources, OIG found that staff holds a reactive rather than proactive approach to material security. The position of some NRC material licensing officials reflects a wait-and-see approach to implementing additional security measures. When questioned about potential security gaps in NRC's own license application and review process, an NRC senior manager stated that NRC has not systematically tried to look at the holes in the process. He added that if NRC license reviewers and inspectors came across such vulnerabilities or holes, either "through their experience or a flash of insight," they would address the holes.

NRC officials have also expressed confidence in their procedures based on the fact that terrorists have not used a dirty bomb. A senior manager told OIG that "until I'm convinced" somebody is trying to obtain material for malevolent use, "I don't see putting more resources in closing the potential vulnerabilities." Another senior manager said that "we have the time" to implement security-related measures for byproduct material and perform reviews of the measures to see if any gaps remain.

The agency also downplays the likelihood of the fraudulent use of NRC documents. A manager stated that the fraudulent use of NRC documents was not a likelihood because the agency had never actually seen this occur. However, OIG found a documented case of such fraudulent use from 1998 in NRC's records and, as noted earlier, the GAO used a fraudulent NRC document during a 2006 investigation.

The implication of these staff perspectives is that NRC has not proactively identified and closed security gaps associated with the malevolent use of radioactive material. Specifically, the agency has not acknowledged the importance of detecting unknown vulnerabilities in addition to addressing all known vulnerabilities. The only assessments the agency currently proposes in response to OIG's audit reports are the "effectiveness reviews" that the agency intends to conduct sometime in the future to determine whether known vulnerabilities have been effectively closed by the proposed or implemented security actions. However, such effectiveness reviews will not help program officials become aware of unknown vulnerabilities.

IV. SUMMARY AND CONCLUSION

The events of September 11, 2001, changed the world forever. It is obvious that we will never live in a risk-free society. Nonetheless, Americans expect government institutions to adapt their approaches to meet the emerging threats posed by motivated and patient terrorists. In line with its safety and security mission, NRC therefore has the responsibility to take appropriate, meaningful steps to mitigate the dangers associated with the uses of radioactive material.

Recently, NRC's efforts to take such appropriate and meaningful steps to address the security of radioactive material have come under closer review. Certainly, NRC has taken a number of steps to improve the security of byproduct material. Nonetheless, the work published by OIG and GAO, as a whole, paints a picture of NRC efforts that are incomplete, especially with regard to taking a comprehensive look inwards at its own business and regulatory processes, which would include conducting a vulnerability assessment of the agency's material licensing and tracking programs. Such an assessment should necessarily include examination of the management, operational, and technical security controls and the extent to which these controls are (1) implemented

correctly, (2) operating as intended, and (3) producing the desired outcome with respect to mitigating security vulnerabilities.

As the Nation's authority on radioactive material, NRC may face continued difficulties in convincing critics and concerned onlookers of the appropriateness of its approach towards byproduct material security. However, OIG has not found any evidence that the agency has sought an independent assessment of the technical, socioeconomic, psychological, environmental, and other risks and consequences associated with the malevolent use of byproduct material. Lacking such an independent assessment of its byproduct material security approach, NRC is faced with the need to continually justify that it is in accord with the potential threat and consequences posed by a dirty bomb. Further, the agency also risks not being aware of potential weaknesses and vulnerabilities in its byproduct material security efforts.

Recommendation

The Office of the Inspector General recommends that the Executive Director for Operations:

1. Convene an independent panel of experts external to the agency to identify agency vulnerabilities concerning NRC's material licensing and tracking programs and validate the agency's ongoing byproduct material security efforts.

[Page intentionally left blank]

Appendix A

SCOPE AND METHODOLOGY

The overall purpose of this report was to synthesize recent findings related to byproduct material tracking and licensing in order to provide a more complete perspective of NRC's approach to byproduct material security and control. The specific objective for this report was to discuss whether NRC has adequately adapted its approach to byproduct material security in the post-September 11 era in accordance with the expectations of congressional and executive policymakers and the American people. To address the objective, OIG incorporated findings from previous OIG and GAO reports, and conducted follow-on work to include reviews of updated regulations and guidance, congressional correspondence and legislation, and Government activities related to material tracking and security.

OIG incorporated findings from three OIG reports published in 2006, as follows:

- *Audit of the Development of the National Source Tracking System*, OIG-06-A-10, February 23, 2006.

- *Audit of the NRC Byproduct Materials License Application and Review Process*, OIG-06-A-11, March 10, 2006.

- *Audit of NRC's Process for Releasing Commission Decision Documents*, OIG-06-A-22, September 8, 2006.

During these audits, OIG met with and interviewed NRC and other Federal agency staff, as well as experts from agencies and organizations external to the Federal Government. OIG conducted analyses and/or performed data reviews of NRC methodologies,

databases, and management controls. Collectively, OIG conducted these audits from February 2005 to March 2006 in accordance with generally accepted Government auditing standards.

OIG also incorporated findings from GAO reports and testimony, as follows:

- *Nuclear Security: Federal and State Action Needed to Improve Security of Sealed Radioactive Sources*, GAO-03-804, August 6, 2003.

- *Nuclear Regulatory Commission: Challenges Facing NRC in Effectively Carrying Out Its Mission*, Testimony Before the Subcommittee on Clean Air, Climate Change, and Nuclear Safety, Committee on Environment and Public Works, U.S. Senate, GAO-05-754T, May 26, 2005.

- *Nuclear Security: DOE Needs Better Information to Guide Its Expanded Recovery of Sealed Radiological Sources*, GAO-05-967, September 22, 2005.

- *Border Security: Investigators Transported Radioactive Sources Across Our Nation's Borders at Two Locations*, Testimony Before the Permanent Subcommittee on Investigations, Committee on Homeland Security and Governmental Affairs, U.S. Senate, GAO-06-583T, March 28, 2006.

- *Border Security: Investigators Transported Radioactive Sources Across Our Nation's Borders at Two Locations*, Testimony Before the Subcommittee on International Terrorism and Nonproliferation, Committee on International Relations, House of Representatives, GAO-06-939T, July 5, 2006.

- *Border Security: Investigators Transported Radioactive Sources Across Our Nation's Borders at Two Locations*, Testimony Before the Subcommittee on International Terrorism and Nonproliferation, Committee on International Relations, House of Representatives, GAO-06-940T, July 7, 2006.

OIG also observed Government activities related to material tracking and security, including activities between NRC and CBP to implement a radioactive material importation approval system.

Major contributors to this report were Anthony Lipuma, Team Leader; Sherri Miotla, Audit Manager; Michael Cash, Senior Technical Advisor; R.K. Wild, Senior Analyst; and Andrea Ferkile, Analyst.

[Page intentionally left blank.]

Appendix B

FORMAL AGENCY COMMENTS

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 12, 2007

MEMORANDUM TO: Stephen D. Dingbaum
Assistant Inspector General for Audits
Office of the Inspector General

FROM: Martin J. Virgilio
Deputy Executive Director for Materials, Waste, Research, State, Tribal, and Compliance Programs
Office of the Executive Director for Operations

SUBJECT: COMMENTS ON THE FINAL DRAFT AUDIT REPORT, "SUMMARY REPORT AND PERSPECTIVES ON BYPRODUCT MATERIAL SECURITY AND CONTROL"

I am responding to your memorandum of December 6, 2006, by providing comments on the Office of the Inspector General (OIG) Final Draft Audit Report, "Summary Report and Perspectives on Byproduct Material Security and Control." As we noted when we met with you in October 2006, we are disappointed that the final draft report did not recognize the substantial efforts that the U.S. Nuclear Regulatory Commission (NRC) has undertaken since 2001 in the area of byproduct material security and control. Nonetheless, we appreciate OIG's revisions to the report to accommodate some of our previous comments. We also agree with the benefits of an independent assessment of NRC programs, such as byproduct material security. Such an independent review has been conducted through the Task Force on Radiation Source Protection and Security (Task Force), as noted below. We have also committed to complete an effectiveness review of our actions taken to date to improve byproduct material security. As such, the staff does not believe that further independent reviews beyond these are necessary at this time.

The Energy Policy Act of 2005, required the establishment of a Task Force, headed by the Chairman of the NRC, to evaluate and provide recommendations regarding the security of radiation sources in the United States. The Task Force on Radiation Source Protection and Security was comprised of representatives from 14 Federal agencies and two State organizations with broad authority over radioactive sources of all categories, including regulatory, security, intelligence, and international activities. The Task Force sent its report to Congress and the President in August 2006. As documented in the report, the Task Force broke the review into 10 major areas, each reviewed by a panel of experts from the appropriate member agencies and organizations. It concluded that since September 11, 2001, Federal agencies, including the NRC, have implemented or are implementing actions to increase security. Although implementation of some of these activities are still in progress, the actions taken to date have substantially enhanced security. Completion of the ongoing activities will continue to be a high priority. The Task Force found no significant gaps that are not already

CONTACT: William R. Ward, MSSA/FSME
(301) 415-7038

S. Dingbaum -2-

being addressed, and concluded that there is reasonable assurance that the highest risk sources in the United States are safe and secure.

NRC continues to pursue the recommendations of the Task Force as well as the actions implemented prior to the formation of the Task Force, including enforcement of security Orders and the increased controls over radioactive material, and establishment of the National Source Tracking System. NRC believes that accomplishment of these initiatives will provide the level of security that OIG also believes NRC should attain. Enclosed are additional specific comments on the draft report, for your consideration.

Enclosure:
Specific Comments on the Final Draft Audit
Report, "Summary Report and Perspectives
on Byproduct Material Security and Control"

SPECIFIC COMMENTS ON THE FINAL DRAFT AUDIT REPORT, "SUMMARY REPORT AND PERSPECTIVES ON BYPRODUCT MATERIAL SECURITY AND CONTROL"

1. Page 1, first paragraph. The definition of byproduct material was amended by the Energy Policy Act of 2005, section 651(e). The definition provided in the footnote is the previous definition.

2. Page 8, first paragraph. Following the events of September 11, 2001, the U.S. Nuclear Regulatory Commission (NRC) implemented a number of initiatives to strengthen its regulation of byproduct material security. We agree that there is always an opportunity to do more. However, eventually the cost of implementing new initiatives outweighs the potential benefit. The report states that ". . . NRC's perspective on byproduct security risk is not in accord with other Federal agencies and interests because NRC has not fully identified and evaluated security risks in the byproduct material area and lacks an independent perspective to assess the security measures in place. Consequently, NRC's approach has resulted in an agency policy and some practices that do not consider the full range of potential consequences of a dirty bomb." We are not aware of any objective data that would support such a finding.

   In fact, soon after the terrorist attacks of September 11, 2001, NRC performed several evaluations of the security risks in the byproduct material area, in an effort to focus its initial attention on areas that posed the highest risk potential. The U.S. Department of Energy (DOE)/NRC Interagency Working Group report on Radiological Dispersal Devices was one of the first reviews. The analysis, of which nuclides deserved greater control and what the appropriate threshold for control should be, was made with dirty bombs in mind. Later, NRC participated in the development of, and later adopted, the nuclide list, categorization, and activity thresholds for the radionuclides of concern issued by the International Atomic Energy Agency (IAEA). Again, this determination was made with dirty bombs in mind. Although the two analyses were evaluated using different sets of consequences, the results in terms of the thresholds and nuclides identified were very similar. As a result, the U.S. Government committed to implementing the IAEA criteria in order to leverage international cooperation in combating the global threat. The security Orders to materials licensees, changes to import/export regulations, and the creation of the National Source Tracking System (NSTS) were direct outcomes of those earlier assessments.

   NRC continues to work with other Federal agencies to improve communication, coordinate roles, and adapt to the threat posed by terrorism. Contrary to the point made on page 8 of the report, NRC has often been ahead of the actions of other agencies and Congressional legislation in determining and implementing strategies to provide greater security and control over byproduct material.

3. Page 11, "NRC Has Not Closed Gaps in Its Material Licensing Process." The report fails to take into account that, beginning in May 2006, NRC implemented a process to ensure that risk-significant quantities of certain radioactive materials will be used as intended. This "Pre-Licensing" guidance requires license reviewers to obtain additional information regarding an applicant, to make a reasonable determination that the applicant will use the material as intended. The guidance was developed in coordination

Enclosure 1

with the Agreement States and is being applied to all materials license reviews in all states, not just NRC license reviews. The quantity thresholds established to initiate this process for existing licensees are the same as the thresholds used for the NSTS, import/export rule, and security orders. However, all new applications will be evaluated, whether or not the applicant satisfies the possession-limit thresholds. This process introduces a reasonable verification that all radioactive materials will be used as intended, not just those materials identified as dangerous.

Since April 2006, NRC has worked with U.S. Customs and Border Protection (CBP) to establish processes to enable CBP officials to contact NRC or Agreement States, to verify the legitimacy of radioactive materials licensees and shipments, when needed. It is not practical to create counterfeit-proof documents that are available to all licensee personnel who may need them. Many shipments are made without licensee personnel accompanying them (using carriers authorized by the U.S. Department of Transportation), and many shipments are below the level of risk significance to warrant the measures Office of the Inspector General (OIG) and U.S. Government Accountability Office (GAO) suggest. By focusing on the shipment and the licensee legitimacy, verification occurs at a level above document authenticity. NRC and the Agreement States can respond to inquiries that CBP officials may make, and, if there are still questions regarding a shipment, the licensee is contacted to resolve the issue.

4. Page 14, "NRC Does Not Track All Dangerous Byproduct Material." As noted in the report, this statement refers to the lack of tracking for IAEA Category 3 sources. At this time, NRC does not have a tracking mechanism in place for Category 3 sources. Based on the risk assessments represented by the DOE/NRC Working Group report and the IAEA determinations, NRC initially committed to establish tracking for Category 2 and above sources, established the interim inventory of sources, and began the creation of the NSTS. Since then, NRC has begun the process to evaluate the need, benefits, and costs of including the tracking of Category 3 sources. Until this review is completed, NRC and the Agreement States have issued Orders (to Panoramic Irradiators, Manufacturer & Distributor radiological materials of quantities of concern, and RAMQC or established legally binding requirements (the "Increased Controls") which require tracking, coordination, and notification relative to the possession, shipment or transfer of Category 2 quantities of Category 3 or above materials. The NRC Regions and the Agreement States are currently performing inspections to check compliance with the Orders and Increased Controls, and to verify that the material possessed is within authorized limits. These initiatives are based on risk and use the most expedient and efficient methods that will accomplish the goals. Before including Category 3 sources in the NSTS, which requires rulemaking, NRC will be required to conduct a regulatory analysis to assess the economic impact and to weigh those costs against the security gains achieved.

5. Page 17, "Congress is Critical of NRC Material Security Efforts." NRC has worked closely with the Congress in enhancing its security program and has complied with all applicable laws. The number of bills stated in this section of the report related to dirty bombs is inflated by including the duplication of bills proposed to the House and Senate, as well in successive sessions. Many, such as the Energy Policy Act of 2005, either codified initiatives NRC already had underway, or provided NRC-requested authorities that could only be granted by legislation. Many opinions have been expressed

regarding the goal of increased security of radioactive sources. The NRC staff considers those opinions, evaluates available data, determines the methods and efficiencies available to accomplish the goals, and balances them with the need to eliminate unnecessary burdens in regulating the safe and secure use of radioactive materials. The staff also listens to, and considers, any feedback or comments regarding its actions and continuously seeks to improve its oversight of radioactive materials.

The April 27, 2006, letter from the Senate to GAO compared an alarm setting on CBP equipment against NRC standards to protect health and security and considered it a serious inconsistency between Federal agency standards. It should be noted that most sensing equipment will be set to alarm at a level well below a dangerous level. The fact that CBP detected the sources does not mean that they are a dangerous quantity. The alarms are intentionally set low to allow CBP to detect much larger quantities of radioactive material that are heavily shielded to avoid detection. It ensures detection of the material so that CBP officials can ascertain the potential danger. This low alarm setting cannot be reasonably compared to a safety or security standard that is established for different reasons at a much higher level. Later remarks concern other potential inconsistencies in standards, such as the difference between those of the U.S. Environmental Protection Agency (EPA) and NRC. The Energy Policy Act Task Force also noted this and recommended follow-up on the issue. NRC is pursuing the Task Force recommendations and will resolve or document the basis for these potential inconsistencies as that effort is completed.

6. Page 20, "NRC Has Not Fully Identified and Evaluated Risks." The report disapproves of NRC's "graded, risk-informed" approach to the security of radioactive materials because it says, the ". . . approach discounts factors related to malevolent terrorist intentions . . ." However, in the fiscal year 2007 appropriations bill (PL 109-295) for the U.S. Department of Homeland Security (DHS), Congress specifically required DHS to ". . . issue interim final regulations establishing risk-based performance standards for security of chemical facilities . . ." It further states, ". . . that such regulations shall apply to chemical facilities that, in the discretion of the Secretary, present high levels of security risk . . ." NRC believes that it is acting in alignment with the intentions of Congress in establishing a graded, risk-informed approach to material security. The *National Infrastructure Protection Plan* also recognizes the need that the determination of security measures must be risk-informed.[1] NRC has evaluated risks and established a program without a similar mandate from Congress, an example of how NRC is ahead of other Federal agencies in establishing security.

In developing this approach, NRC has identified and considered many risks. At this time, some risk evaluation methods have not been fully developed. For example, although there has been discussion of including economic and psychological effects in a risk analysis, we are unaware of any standards that have been created for the

[1] Under the section titled, "Planning Assumptions", the Nuclear Sector-Specific Plan states, "It is not practical to protect all assets, systems, networks, and functions against every possible terrorist attack. A risk-based approach driven by intelligence analysis and reporting is crucial to an effective risk management strategy and efficient resource allocation."

performance of such analyses by NRC or any other Federal agency, in evaluating the consequences of a terrorist action. NRC continues to work with DHS and other Federal agencies and will consider alternative consequence criteria, not currently included in the decision-making framework when there is agreement on a standard. NRC continues to review the intelligence analysis and improvements in the performance of these risk analyses and will make changes to its security approach as necessary. However, NRC is a leader in the Federal community in evaluating the risks and establishing a program. NRC does not agree that the establishment of an independent panel of experts is necessary at this time.

Appendix C

OIG ANALYSIS OF AGENCY COMMENTS

In a January 12, 2007, letter accompanying its response to OIG's report, the agency stated that it agrees with the benefits of an independent assessment of NRC programs such as byproduct material security. The agency then states that such an independent review was conducted through the Task Force on Radiation Source Protection and Security, also referred to as the Task Force. OIG does not accept the agency's suggestion that the Task Force fulfills the intent of the OIG recommendation for two primary reasons, as follows:

1. The Task Force is not independent. The overall Task Force is chaired by NRC. All of the Task Force issue area subgroups contain one or more NRC staff, and 5 of the 10 subgroups designate NRC staff as the subgroup lead. Some subgroups contain as many as 5 or 6 NRC staff. With so many NRC staff involved, there is no way to determine what influence NRC may have had in Task Force proceedings and findings. Nor is there any way to determine if NRC's participation was objective when the focus of a subgroup meeting was an NRC program.

   "Independence" is a key concept that OIG incorporated into its recommendation in order to address the agency's reluctance to implement OIG's earlier recommendation. In March 2006, OIG recommended that NRC conduct a complete vulnerability assessment of its materials program. With regard to that previous recommendation, however, the agency believes that such an effort is unnecessary. OIG believes that the agency may not have the objectivity to review its own program for vulnerabilities.

2. The Task Force Charter does not require in-depth review and identification of NRC program vulnerabilities. The Task Force, which was established by an Act of Congress and was not a proactive security effort of the NRC, was primarily established to evaluate and provide recommendations to the President and Congress relating to security of radiation sources. But the Charter does not specifically require the identification of agency vulnerabilities in NRC's licensing and tracking programs.

> In its letter to OIG, NRC states that the Task Force found no significant gaps that are not already being addressed. Yet, the Task Force was not chartered to and did not perform a comprehensive vulnerability assessment of NRC material programs, and there is no discussion of or results from any such assessment in the Task Force's August 2006 report. Such an assessment should necessarily include examination of the management, operational, and technical security controls and the extent to which these controls are (1) implemented correctly, (2) operating as intended, and (3) producing the desired outcome with respect to mitigating security vulnerabilities.

NRC provided additional comments on the OIG draft report pertaining to the agency's ongoing efforts to implement security controls, close or address known security gaps, track materials, respond to Congressional concerns, and implement a risk-informed approach to the security of radioactive materials. OIG has revised portions of its report to reflect the agency's implementation or stated intentions to implement some of these measures. However, the agency has not conducted an impartial and comprehensive look inwards at its own business and regulatory processes, which would include conducting vulnerability assessments of the agency's material licensing and tracking programs. OIG has emphasized in its reports and in conversations with the agency the importance of an approach that first seeks to identify hitherto unknown vulnerabilities, and then take steps to address the vulnerabilities. NRC's response to OIG's reports has focused largely on the issue of addressing known vulnerabilities. Furthermore, the agency has not acknowledged the need to perform a comprehensive review as a measure of self-assurance with regard to unknown vulnerabilities.