Regulatory Analysis for the Proposed Rule on National Source Tracking of Sealed Sources - 10 CFR Parts 20, 32, and 150

Draft Report

U.S. Nuclear Regulatory Commission
Office of Nuclear Material Safety and Safeguards

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EXECUTIVE SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to implement a new program called the National Source Tracking System. Under this program, licensees would be required to report information on the manufacture, transfer, receipt, and disposal of nationally tracked sources. This information will be used to support the National Source Tracking System and will provide the NRC with a life cycle account for nationally tracked sources and, thus, improve accountability and controls over them.

This regulatory analysis evaluates the values and impacts associated with the two regulatory alternatives considered by the NRC to address the tracking of sealed sources:

- *Option 1: No Action*. Under the no-action alternative, the NRC would not establish the National Source Tracking System. Thus, licensees would not be required to report transaction information associated with the manufacture, transfer, receipt, and disposal of nationally tracked sources.

- *Option 2: National Source Tracking System*. Under the National Source Tracking System alternative, the NRC would establish the National Source Tracking System. Under this program, each licensee who manufactures, transfers, receives, or disposes of a nationally tracked source would be required to: (1) report its initial inventory of Category 1 and/or 2 nationally tracked sources; (2) complete and submit a National Source Tracking Transaction Report after each transaction; (3) correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery; and (4) reconcile and verify its inventory of nationally tracked sources on an annual basis. In addition, licensees who manufacture nationally tracked sources after the effective date of the rule would be required to assign a unique serial number to each nationally tracked source.

The no-action alternative is the default approach if Option 2 is not the preferred alternative. The primary function of Option 1 is to establish the baseline condition from which the incremental values and impacts associated with the National Source Tracking System alternative are calculated.

The NRC estimated the incremental costs to industry and the NRC under Option 2. These costs were estimated for the years 2005 through 2016. All costs incurred in the future were calculated in 2005 dollars using discount rates of 7 and 3 percent. The results are presented in Table ES-1.

Table ES-1
Present Value of the Total Costs Under Option 2,
the National Source Tracking System Alternative: 2005 - 2016 [a]
(2005 dollars)

Discount Rate	Costs to Industry	Costs to the NRC	Total Costs
7%	$1,395,740	$18,266,000	$19,661,740
3%	$1,737,940	$21,787,000	$23,524,940

[a] Table includes rounding error.

As shown in Table ES-1, the net present value under Option 2, using a 7 percent discount rate, is estimated to be a total cost of $19,661,740. Using a 3 percent discount rate, the net present value is estimated to be a total cost of $23,524,940.

The NRC staff believes that the expected qualitative values contribute substantially to the benefits of the National Source Tracking System. These qualitative values include:

- *Improved Security for Nationally Tracked Sources.* The National Source Tracking System is expected to result in improved accountability and controls over nationally tracked sources. This is expected to improve public health (accident/event) and avert potential offsite property damage and costs by decreasing the risk of a security-related event involving nationally tracked sources.

- *Improved Understanding of the Location of Nationally Tracked Sources.* Information contained in the National Source Tracking System would improve the information available to the NRC, as well as other government entities (e.g., Department of Homeland Security, Agreement States), concerning the locations of nationally tracked sources.

- *Improved Regulatory Efficiency.* The establishment of a national program to monitor the location of nationally tracked sources would improve regulatory efficiency by: (1) increasing accountability among all parties associated with a nationally tracked source transaction and (2) responding to a recommendation in the IAEA's Code of Conduct.

- *Enhanced Ability to Promote and Maintain the Common Defense and Security*. Information contained in the National Source Tracking System would allow the NRC to better monitor the location of nationally tracked sources and, thus, improve accountability and controls over them. Consequently, the National Source Tracking System would enhance the NRC's ability to maintain and promote the common defense and security.

- *Increased Public Confidence.* Information contained in the National Source Tracking System would allow the NRC to better monitor the location of nationally tracked sources. This is expected to result in increased public confidence in NRC’s regulation of inventories of radioactive materials that could be used in the production of radiological dispersal devices (RDDs) and radiological exposure devices (REDs).

The NRC believes the incremental costs to licensees and the NRC under Option 2 are justified because the requested actions and information are necessary to monitor the location of nationally tracked sources and, thus, promote and maintain the common defense and security.

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1. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to implement a new program called the National Source Tracking System. Under this program, licensees would be required to report information on the manufacture, transfer, receipt, and disposal of nationally tracked sources. This information will be used to support the National Source Tracking System and will provide the NRC with a life cycle account for nationally tracked sources and, thus, improve accountability and controls over them.

The NRC considered two alternatives to address the tracking of certain sealed sources. The purpose of this regulatory analysis is to evaluate the values and impacts associated with these two regulatory alternatives. The NRC considers the regulatory analysis process an integral part of its statutory mission to promote the common defense and security, to ensure adequate protection of public health and safety, and to protect the environment from civilian uses of byproduct, source, and special nuclear materials. This document presents background material, describes the objectives of the proposed regulatory action, outlines the alternatives considered by the NRC, and evaluates the values and impacts of the regulatory alternatives.

1.1 Background

As a result of the terrorist attacks in the U.S. on September 11, 2001, the NRC has undertaken a comprehensive review of nuclear material security requirements, with particular focus on radioactive material of concern. This material, including Cobalt-60, Cesium-137, Iridium-192, and Americium-241 isotopes, has the potential to be used in a radiological dispersal device (RDD) or a radiological exposure device (RED) in the absence of proper security measures. The NRC's review takes into consideration the changing domestic and international threat environments and related U.S. Government supported international initiatives in the nuclear security area, particularly activities conducted by the International Atomic Energy Agency (IAEA).

In June 2002, the Secretary of Energy and the NRC Chairman met to discuss the adequate protection of inventories of nuclear materials that could be used in a RDD. At the June meeting, the Secretary of Energy and the NRC Chairman agreed to convene an Interagency Working Group on Radiological Dispersal Devices to address security concerns. In May 2003, the joint U.S. Department of Energy (DOE)/NRC report, "Radiological Dispersal Devices: An Initial Study to Identify Radioactive Materials of Greatest Concern and Approaches to Their Tracking, Tagging, and Disposition," was issued.[1] One of the recommendations contained in the report is that a national source tracking system be developed to better understand and monitor the location and movement of sources of interest.

The NRC has also supported U.S. Government efforts to establish international guidance for the safety and security of radioactive materials of concern. This effort has resulted in a major revision of the IAEA Code of Conduct on the Safety and Security of Radioactive Sources (Code of Conduct). The revised Code of Conduct was approved by the IAEA Board of Governors in

[1] This report is available on the DOE Web site at: http://www.energy.gov/engine/doe/files/dynamic/1222004142719_RDDRPTF14MAY03.pdf.

September 2003.[2] In particular, the Code of Conduct recommends that each IAEA member State develop a national source registry of radioactive sources that should include Category 1 and 2 radioactive sources as described in Annex 1 of the Code of Conduct. The recommendation covers 16 isotopes that should be included in the source registry.

The U.S. Government has formally notified the Director General of the IAEA of its political commitment for the current Code of Conduct. Although the Code of Conduct does not have the stature of an international treaty, and its provisions are non-binding on IAEA member States, the U.S. Government has endorsed the Code of Conduct and is working toward implementation of its various provisions. The Commission is conducting this rulemaking to reflect those Code of Conduct recommendations that are consistent with the NRC's responsibilities under the Atomic Energy Act, including the promotion of the common defense and security.

Efforts to improve controls over sealed sources face significant challenges, especially balancing the need to secure the materials without discouraging their beneficial use in academic, medical, and industrial applications. Radioactive materials provide critical capabilities in the oil and gas, electrical power, construction, and food industries; are used to treat millions of patients each year in diagnostic and therapeutic procedures; are used in a variety of military applications; and are used in technology research and development involving academic, government, and private institutions. These materials are as diverse in geographical location as they are in functional use.

National source tracking is part of a comprehensive radioactive source control program for radioactive materials of greatest concern. Although neither a national source tracking system nor a source registry can ensure the physical protection of sources, they would provide greater source accountability. Thus, the NRC believes that a national source tracking system, in conjunction with other activities, would result in improved security for radioactive sources.

1.2 Objectives of the Proposed Regulatory Action

There is broad U.S. Government and international interest in tracking radioactive sources to improve accountability and control. Currently, there is no single U.S. source of information to verify the licensed users, locations, and quantities of these materials. Separate NRC and Agreement State systems contain information on licensees and the maximum amounts of materials they are authorized to possess but do not record actual sources.

To address this lack of information on actual material possessed, the NRC, with the cooperation of the Agreement States, began working on an interim database of sources of concern. In November 2003, both NRC and Agreement State licensees were contacted and requested to provide some basic information on the sealed sources located at their facilities. Of the approximately 2,600 licensees contacted, over half of the licensees reported possessing Category 1 or Category 2 sealed sources. The NRC plans to replace the interim database with the National Source Tracking System. While the interim database provides a snapshot in time, the National Source Tracking System is expected to provide information on an ongoing basis.

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[2] The revised Code of Conduct is available on the IAEA Web site at: http://www-pub.iaea.org/MTCD/publications/PDF/Code-2004.pdf.

Development of the National Source Tracking System would include both rulemaking and information technology (IT) development and maintenance activities. When completely operational, the National Source Tracking System will be a web-based system that would allow licensees to meet the proposed reporting requirements on-line with ease. This proposed rulemaking would impose requirements on both NRC and Agreement State licensees and would establish the regulatory foundation for the National Source Tracking System. The National Source Tracking System is being developed and would be implemented under the NRC's statutory authority to promote the common defense and security.

To inform the development of the National Source Tracking System, the NRC established an Interagency Coordinating Committee to provide guidance regarding interagency issues associated with the development, coordination, and implementation of the system. The Committee membership consists of representatives from various Federal agencies with an interest in source security and a representative from the Agreement States. The views of the Committee were included in the development of the requirements for the National Source Tracking System and this rulemaking.

2. Identification and Preliminary Analysis of Alternative Approaches

This regulatory analysis evaluates the values and impacts of two regulatory alternatives. The following subsections describe these two alternatives.

2.1 Option 1: No Action

Under Option 1, the NRC would not establish the National Source Tracking System. Thus, licensees would not be required to report transaction information associated with the manufacture, transfer, receipt, and disposal of nationally tracked sources.

2.2 Option 2: National Source Tracking System

Under Option 2, the NRC would establish the National Source Tracking System. Under this program, each licensee who manufactures, transfers, receives, or disposes of a nationally tracked source would be required to:

- Report its initial inventory of Category 1 nationally tracked sources to the National Source Tracking System by December 31, 2006
- Report its initial inventory of Category 2 nationally tracked sources to the National Source Tracking System by March 31, 2007
- Complete and submit a National Source Tracking Transaction Report (i.e., NRC Form 748) after each transaction
- Correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery

- Reconcile and verify the inventory of nationally tracked sources it possesses against the data in the National Source Tracking System on an annual basis

In addition, each licensee who manufactures a nationally tracked source after the effective date of the rule would be required to assign a unique serial number to each nationally tracked source.

3. Analysis of Values and Impacts

The three subsections below describe the analysis conducted to identify and evaluate the values and impacts expected to result from the implementation of the National Source Tracking System. Subsection 3.1 identifies the attributes that the National Source Tracking System is expected to affect. Subsection 3.2 describes the methodology used to analyze the values and impacts associated with the National Source Tracking System. Subsection 3.3 discusses the results of the analysis.

3.1 Identification of Affected Attributes

This subsection identifies the attributes, within the public and private sectors, that the National Source Tracking System is expected to affect, using the list of potential attributes provided in Chapter 5 of NUREG/BR-0184, "Regulatory Analysis Technical Evaluation Handbook," dated January 1997. Each attribute listed in Chapter 5 was evaluated. The basis for selecting those attributes expected to be affected by the National Source Tracking System is presented below.

The National Source Tracking System is expected to affect the following attributes:

- *Public Health (Accident/Event)*. The National Source Tracking System would require licensees to report information on the manufacture, transfer, receipt, and disposal of nationally tracked sources. This information would provide a life cycle account for these sources. As a result, the proposed regulatory action is expected to improve accountability and controls over them. This reduces the risk that terrorists may obtain and use radioactive materials in the production of RDDs and REDs and, therefore, has a positive effect on public health.

- *Offsite Property*. As stated above, licensees would be required to provide a life cycle account for nationally tracked sources. Improvement in the accountability and controls over these sources is expected to avert potential offsite property damage and costs (e.g., long-term relocation, emergency response) that may follow from a terrorist attack in which RDDs and/or REDs are used.

- *Industry Implementation*. The proposed regulatory action would require licensees to report their initial inventory of Category 1 and 2 nationally tracked sources to the National Source Tracking System. Licensees who reported nationally tracked source information to the interim database would need only to verify or update their reported inventory information. Licensees who did not provide nationally tracked source information to the interim database would need to report their inventory information by the specified dates. As a result, licensees (i.e., industry) will incur one-time implementation costs under the proposed regulatory action.

- *Industry Operation*. The proposed regulatory action would require licensees to: (1) complete and submit a National Source Tracking Transaction Report after each transaction; (2) correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery; (3) reconcile and verify the inventories of nationally tracked sources they possess against the data in the National Source Tracking System on an annual basis; and (4) assign a unique serial number to each nationally tracked source they manufacture (if applicable). As a result, licensees (i.e., industry) will incur annual operating costs under the proposed regulatory action.

- *NRC Implementation*. To implement the proposed regulatory action, the NRC would perform rulemaking and IT development activities. Specifically, the NRC would develop a final rule to implement the National Source Tracking System program and arrange to develop a web-based National Source Tracking System, as well as guidance on how to report information on nationally tracked source transactions to the National Source Tracking System.[3] As a result, the NRC will incur one-time implementation costs under the proposed regulatory action.

- *NRC Operation*. Under the proposed regulatory action, NRC staff would review nationally tracked source information submitted to the National Source Tracking System and arrange for operation and maintenance activities on the web-based National Source Tracking System. As a result, the NRC will incur annual operating costs under the proposed regulatory action.

- *Other Government*. Under the proposed regulatory action, other Federal agencies and State and local governments (e.g., Department of Homeland Security, Agreement States) would have access to and benefit from the information contained in the National Source Tracking System. This information may allow them to better monitor the location of nationally tracked sources and focus resources on higher risk licensees (e.g., based on the number of nationally tracked sources they possess). In addition, the information contained in the National Source Tracking System would improve coordination among the various agencies.

- *Improvements in Knowledge*. The proposed regulatory action would require licensees to report information on the manufacture, transfer, receipt, and disposal of nationally tracked sources. This information would allow the NRC to better understand the location of nationally tracked sources.

- *Regulatory Efficiency*. The proposed regulatory action would improve regulatory efficiency by establishing a national source tracking program to monitor the location of nationally tracked sources. Consequently, there would be increased accountability among all parties associated with a nationally tracked source transaction. In addition, the proposed regulatory action would improve regulatory efficiency by implementing applicable features of the IAEA's Code of Conduct.

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[3] Consistent with direction in Section 5.7.9 of NUREG/BR-0184, this analysis does not include the pre-decisional costs of developing and issuing the proposed rule.

- *Safeguards and Security Considerations*. The proposed regulatory action would require licensees to provide a life cycle account for nationally tracked sources. This information would allow the NRC to better monitor the location of nationally tracked sources and thus, improve accountability and controls over them. Consequently, the proposed regulatory action would enhance the NRC's ability to maintain and promote the common defense and security.

- *Other Considerations*. The proposed regulatory action would require licensees to provide a life cycle account for nationally tracked sources. This information would allow the NRC to better monitor the location of nationally tracked sources. As a result, the proposed regulatory action may increase public confidence in NRC's regulation of inventories of radioactive materials that could be used in the production of RDDs and REDs.

The National Source Tracking System is *not* expected to affect the following attributes:

- Public Health (Routine)
- Occupational Health (Accident)
- Occupational Health (Routine)
- Onsite Property
- General Public
- Antitrust Considerations
- Environmental Considerations

3.2 Methodology

This subsection describes the methodology used to analyze the values and impacts associated with the implementation of the National Source Tracking System. The values include any desirable changes in the affected attributes, while the impacts include any undesirable changes in the affected attributes.

This analysis relies on both a quantitative and a qualitative analysis of the affected attributes. The quantitative analysis involves the assessment of values (savings) and impacts (costs) under the National Source Tracking System. The qualitative analysis involves a discussion of those attributes that the NRC was not able to quantify.

The balance of this subsection describes the most significant analytical data and assumptions used in the quantitative analysis of the affected attributes.

3.2.1 Baseline for Analysis

The analysis measures the incremental values and impacts of the National Source Tracking System relative to a baseline (Option 1, the no-action alternative), which is how the world would be in the absence of the National Source Tracking System.

3.2.2 Assumptions

The following subsections discuss the assumptions used in the analysis.

3.2.2.1 Number of Licensees that Possess Nationally Tracked Sources

Based on data from the NRC's interim database of nationally tracked sources and NRC staff's best judgment, the NRC estimates that there will be 1,350 licensees that may possess Category 1 and/or 2 nationally tracked sources. There were 1,328 licensees that reported some inventory information to the interim database that indicates they possess Category 1 and/or 2 nationally tracked sources.

3.2.2.2 Number of Nationally Tracked Sources

Based on data in the NRC's interim database of nationally tracked sources and NRC staff's best judgment, the NRC estimates that, collectively, licensees possess approximately 75,000 Category 1 and/or 2 nationally tracked sources. The interim database contains information on about 3,600 of these sources[4].

3.2.2.3 Method of Submitting National Source Tracking Transaction Reports

Based on best judgment, the NRC anticipates that, of the 1,350 licenses with nationally tracked sources, about 75 percent (1,015 licensees) would report nationally tracked source transaction information using on-line forms, about 15 percent (200 licensees) using computer-readable format files, about 4.75 percent (64 licensees) by fax, about 4.75 percent (64 licensees) by mail, and about 0.5 percent (7 licensees) by telephone with followup by fax or mail. These assumptions are reflected in Table 1.

[4] In providing nationally tracked source information for the interim database, licensees were allowed to treat irradiators and gamma knives as a single source to encourage reporting of some data. Each gamma knife actually has 201 individual sources and each irradiator has from a few sources to over 1,500 individual sources.

Table 1
Estimated Number of Licensees that Possess Nationally Tracked Sources, by Report Submission Method

Submission Method	Total Number of Licensees
On-line forms	1,015
Computer-readable format file	200
Fax	64
Mail	64
Telephone with followup by fax or mail	7
Total	1,350

3.2.2.4 Number of National Source Tracking Transaction Reports

Based on data in the NRC's interim database of nationally tracked sources and NRC staff's best judgment, the NRC estimates that, each year, licensees perform up to 63,050 nationally tracked source "transactions." The NRC also estimates that, of these 63,050 transactions, 15,000 are associated with the manufacture of new nationally tracked sources, 24,000 with the transfer of nationally tracked sources, 24,000 with the receipt of nationally tracked sources, and 50 with the disposal of nationally tracked sources. These numbers are based on the assumption that gamma knife sources are replaced every five years, radiography sources are replaced every four months, and one tenth of the irradiator sources are exchanged every year. These assumptions are reflected in Table 2.

Table 2
Estimated Annual Number of Nationally Tracked Source Transactions

Type of Transaction	Number of Transactions
Manufacture	15,000
Transfer	24,000
Receipt	24,000
Disposal	50
Total	63,050

For each of the 63,050 transactions identified in Table 2, licensees would be required to complete and submit a National Source Tracking Transaction Report using on-line forms, computer-readable format files, fax, mail, or telephone with followup by fax or mail. The NRC is uncertain about the number of National Source Tracking Transaction Reports that would be submitted each year for each type of transaction and submission method (e.g., manufacture/on-

line forms, manufacture/fax). However, the NRC anticipates that the majority of the reports would be submitted by manufacturers and distributors. These entities are expected to report their transaction information electronically using computer-readable format files, given the large volume of transactions they perform. For purposes of this analysis, the NRC made the following simplifying assumptions:

- Manufacture:
  - -- Each year, licensees would perform 15,000 transactions associated with the manufacture of new nationally tracked sources
  - -- All reports associated with the manufacture of new nationally tracked sources would be submitted using computer-readable format files
  - -- Each report would contain information on 100 transactions

- Transfer and receipt:
  - -- Each year, licensees would perform 48,000 transactions associated with the transfer and receipt of nationally tracked sources
  - -- Reports associated with the transfer and receipt of nationally tracked sources would be submitted as follows:
    - 5,288 using on-line forms
    - 42,000 using computer-readable format files
    - 338 by fax
    - 338 by mail
    - 36 by telephone with followup by fax or mail
  - -- Each report submitted using computer-readable format files would contain information on 100 transactions; reports submitted using any other method would contain information on three transactions
  - -- The number of transfer reports equals the number of receipt reports

- Disposal:
  - -- Each year, licensees would perform 50 transactions associated with the disposal of nationally tracked sources
  - -- All reports associated with the disposal of nationally tracked sources would be submitted using on-line forms
  - -- Each report would contain information on three transactions

These assumptions are reflected in Table 3.

Table 3
Estimated Number of National Source Tracking Transaction Reports Submitted Annually, by Type of Transaction and Submission Method

Type of Transaction	Submission Method					Total
	On-Line Forms	Computer-Readable Format File	Fax	Mail	Telephone with Followup by Fax or Mail	
Manufacture	0	150	0	0	0	150
Transfer	882	210	56	56	6	1,210
Receipt	882	210	56	56	6	1,210
Disposal	17	0	0	0	0	17
Total	1,781	570	112	112	12	2,587

3.2.3 Analysis

This subsection discusses the analyses of the quantifiable impacts (i.e., costs) associated with the implementation of the National Source Tracking System. For purposes of this analysis, the impacts under the National Source Tracking System were categorized as follows:

- Rulemaking and IT development/maintenance activities
- National source tracking system account set-up
- Initial inventory of nationally tracked sources
- National Source Tracking Transaction Reports
- Correction of previously filed National Source Tracking Transaction Reports
- Annual inventory reconciliation of nationally tracked sources
- Nationally tracked source unique serial numbers

The cost assumptions for each of the above impact categories are discussed in the following subsections. Note that all costs presented in this subsection are in 2005 dollars.

3.2.3.1 Rulemaking and IT Development/Maintenance Activities

In implementing the proposed regulatory action, the NRC expects to perform final rulemaking and IT development/maintenance activities. Among other things, these activities include development of the final rule, guidance documents, and licensee training; development, enhancement, and maintenance and operation of the web-based National Source Tracking System.

The NRC estimates that, between 2005 and 2007, the NRC will incur $6,791,300 to develop the National Source Tracking System. This value represents both NRC staff and contractor time and effort. The NRC anticipates that, of this $6,791,300, $1,056,000 will be incurred in Fiscal

Year (FY) 2005, $4,744,000 in FY 2006, and $991,300 in FY 2007.[5] Once the system is developed, the NRC estimates that approximately $2,000,000 a year will be expended for the maintenance and operation of the system, beginning in FY 2008.[6] This includes NRC and contractor time and effort.

3.2.3.2 National Source Tracking System Account Set-Up

To report nationally tracked source transaction information electronically, a licensee would need to establish an account with the National Source Tracking System. Once an account is established, the licensee would be provided with password information that would allow access to the system.

The NRC estimates that, on average, 0.5 hour (30 minutes) of licensee staff time would be required to establish an account with the National Source Tracking System. Using an estimated average labor rate of $87 per hour for licensee staff[7], the cost for establishing an account is estimated to be $43.50 per licensee (i.e., 0.5 hour x $87/hour). As shown in Table 1, the NRC anticipates that, of the 1,350 licensees with nationally tracked sources, 1,215 (i.e., 1,015 + 200) would report transaction information electronically using on-line forms or computer-readable format files. Thus, industry's total cost for establishing accounts with the National Source Tracking System is estimated to be $52,853 (i.e., 1,215 licensees x $43.50/licensee).

Note that, for purposes of this analysis, the NRC made the assumption that all licensees reporting nationally tracked source transaction information electronically would establish their accounts with the National Source Tracking System in 2006.

3.2.3.3 Initial Inventory of Nationally Tracked Sources

Under existing regulations, licensees are required to conduct an inventory of their sealed sources. The proposed regulatory action would require licensees to report their initial inventory of Category 1 and 2 nationally tracked sources to the National Source Tracking System. Licensees that reported nationally tracked source information to the interim database would need only to verify or update their inventory information. Licensees that did not provide

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[5] FY 2005 covers the period between October 1, 2004 and September 30, 2005. FY 2006 covers the period between October 1, 2005 and September 30, 2006. FY 2007 covers the period between October 1, 2006 and September 30, 2007.

[6] FY 2008 covers the period between October 1, 2007 and September 30, 2008.

[7] The average hourly labor rate of $87 is based on NRC staff's best judgment. This hourly labor rate includes costs associated with employee benefits (e.g., health plan). However, it does not include costs associated with overhead (e.g., rent, utilities). Note that this approach was taken because, for purposes of this analysis, the NRC is interested in measuring costs associated with incremental workload changes in response to the proposed regulatory action.

nationally tracked source information to the interim database would need to report their initial inventory of Category 1 nationally tracked sources to the National Source Tracking System by December 31, 2006, and their initial inventory of Category 2 nationally tracked sources by March 31, 2007.

The NRC estimates that licensees would require, on average, 0.50 hour (30 minutes) to verify/update or report initial inventory information on their nationally tracked sources.[8] Using an estimated average labor rate of $87 per hour for licensee staff, the labor cost for verifying/updating or initially reporting this information is estimated to be $43.50 per licensee (i.e., 0.50 hour x $87/hour). As shown in Table 1, the NRC estimates that 1,350 licensees would verify/update or initially report inventory information for nationally tracked sources. Thus, the labor cost to licensees is estimated to be $58,725 (i.e., 1,350 licensees x $43.50/licensee).

In addition, the NRC estimates that licensees would incur materials costs, based on the submission method selected. These costs are described below:

- *On-Line Forms and Computer-Readable Format Files.* The NRC considers Internet access to be a standard business practice. Therefore, for purposes of this analysis, the cost associated with the purchase of Internet access services is not considered an incremental cost to licensees.

- *Fax.* The NRC estimates that each of the 64 licensees submitting information by fax (see Table 1) would incur a materials cost of $0.15 for faxing the information to the National Source Tracking System.[9] Thus, the materials cost to licensees submitting information by fax is estimated to be $9.60 (i.e., 64 licensees x $0.15/licensee).

- *Mail.* The NRC estimates that each of the 64 licensees submitting information by mail (see Table 1) would incur a materials cost of $3.64 for mailing the information to the National Source Tracking System.[10] Thus, the materials cost to licensees submitting information by mail is estimated to be $232.96 (i.e., 64 licensees x $3.64/licensee).

- *Telephone with Followup by Fax or Mail.* The NRC estimates that each of the seven licensees submitting information by telephone with followup by fax or mail would incur a materials cost of $4.16 for making a telephone call and mailing the information to the National Source Tracking System.[11] Thus, the materials cost to licensees submitting

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[8] Note that some licensees may require more or less time to verify/update or initially report inventory information on their nationally tracked sources. The time required by each licensee would depend on licensee-specific factors (e.g., number of sources, licensee's efficiency).

[9] Based on the cost of a two-minute State-to-State telephone call.

[10] Includes costs associated with mailing a five-ounce package by certified mail in a manila envelope ($1.29 for postage, $2.30 for the certified-mail fee, and $0.05 for a manila envelope).

[11] Includes a cost of $0.52 for making a seven-minute State-to-State telephone call and a cost of $3.64 for mailing the inventory information to the National Source Tracking System.

information by telephone with followup by fax or mail is estimated to be $29.12 (i.e., 7 licensees x $4.16/licensee).

Based on the above, the materials cost to licensees is estimated to be $271.68 (i.e., $0 + $9.60 + $232.96 + $29.12).

In summary, the NRC estimates that industry's total one-time cost for verifying/updating or initially reporting nationally tracked source inventory information would be $58,997 (i.e., $58,725 + $271.68). For purposes of this analysis, the NRC assumes that 50 percent of this *one-time* industry implementation cost would be incurred in 2006 and 50 percent would be incurred in 2007.

3.2.3.4 National Source Tracking Transaction Reports

As stated earlier, the proposed regulatory action would require each licensee who manufactures, transfers, receives, or disposes a nationally tracked source to complete and submit a National Source Tracking Transaction Report (i.e., NRC Form 748).

Following is a discussion of the costs that would be incurred by industry in completing and submitting these reports:

- *Reports Submitted Using On-Line Forms*. The NRC estimates that, on average, 10 minutes of licensee staff time would be required to complete and submit a National Source Tracking Transaction Report on-line. Using an estimated average labor rate of $87 per hour for licensee staff, the cost for conducting these activities is estimated to be $14.50 per report (i.e., [10 minutes/60 minutes] x $87/hour).[12]

  As shown in Table 3, the NRC estimates that, each year, licensees would complete and submit 1,781 reports on-line. Thus, the industry's total annual cost for completing and submitting National Source Tracking Transaction Reports on-line is estimated to be $25,825 (i.e., 1,781 reports x $14.50/report).

- *Reports Submitted Using a Computer-Readable Format File*. The NRC estimates that, on average, five minutes of licensee staff time would be required to complete and submit a National Source Tracking Transaction Report electronically using a computer-readable format file. Using an estimated average labor rate of $87 per hour for licensee staff, the cost for conducting these activities is estimated to be $7.25 per report (i.e., [5 minutes/60 minutes] x $87/hour).[13]

  As shown in Table 3, the NRC estimates that, each year, licensees would complete and

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[12] The NRC considers Internet access to be a standard business practice. Therefore, for purposes of this analysis, the cost associated with the purchase of Internet access services is not considered an incremental cost to licensees.

[13] The NRC considers Internet access to be a standard business practice. Therefore, for purposes of this analysis, the cost associated with the purchase of Internet access services is not considered an incremental cost to licensees.

submit 570 reports using computer-readable format files. Thus, the industry's total annual cost for completing and submitting National Source Tracking Transaction Reports electronically using computer-readable format files is estimated to be $4,133 (i.e., 570 reports x $67.25/report).

- *Reports Submitted by Fax*. The NRC estimates that, on average, 0.25 hour (15 minutes) of licensee staff time would be required to complete and submit a National Source Tracking Transaction Report by fax. Using an estimated average labor rate of $87 per hour for licensee staff, the labor cost for conducting these activities is estimated to be $21.75 (i.e., 0.25 hours x $87/hour). In addition, the NRC estimates that, on average, licensees would incur a materials cost of $0.15 for each report they fax to the National Source Tracking System.[14] Thus, the total cost for completing and submitting a report is estimated to be $21.90 (i.e., $21.75 + $0.15).

  The NRC further estimates that, each year, licensees would complete and submit 112 reports by fax. Thus, the industry's total annual cost for completing and submitting National Source Tracking Transaction Reports by fax is estimated to be $2,453 (i.e., 112 reports x $21.90/report).

- *Reports Submitted by Mail*. The NRC estimates that, on average, 0.25 hour (15 minutes) of licensee staff time would be required to complete and submit a National Source Tracking Transaction Report by mail. Using an estimated average labor rate of $87 per hour for licensee staff, the labor cost for conducting these activities is estimated to be $21.75 (i.e., 0.25 hours x $87/hour). In addition, the NRC estimates that, on average, licensees would incur a materials cost of $3.64 for each report they mail to the National Source Tracking System.[15] Thus, the total cost for completing and submitting a report is estimated to be $25.39 (i.e., $21.75 + $3.64).

  The NRC further estimates that, each year, licensees would complete and submit 112 reports by mail. Thus, the industry's total annual cost for completing and submitting National Source Tracking Transaction Reports by mail is estimated to be $2,844 (i.e., 112 reports x $25.39/report).

- *Reports Submitted by Telephone with Followup by Fax or Mail*. The NRC estimates that, on average, 0.30 hours (18 minutes) of licensee staff time would be required to complete and submit a National Source Tracking Transaction Report by telephone with followup by fax or mail.[16] Using an estimated average labor rate of $87 per hour for licensee staff, the labor cost for conducting these activities is estimated to be $26.10

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[14] Based on the cost of a two-minute State-to-State telephone call.

[15] Includes costs associated with mailing a five-ounce package by certified mail in a manila envelope ($1.29 for postage, $2.30 for the certified-mail fee, and $0.05 for a manila envelope).

[16] For purposes of this analysis, the NRC assumes that licensees submitting information by telephone with followup by fax or mail would spend three minutes more than licensees submitting information by mail or fax. This estimate takes into account the additional time they would need to report the information by telephone.

(i.e., 0.30 hours x $87/hour). In addition, the NRC estimates that, on average, licensees would incur a cost of $3.86 for each report they submit by telephone to the National Source Tracking System.[17] Thus, the total cost for completing and submitting a report is estimated to be $29.96 (i.e., $26.10 + $3.86).

The NRC further estimates that, each year, licensees would complete and submit 12 reports by telephone. Thus, the industry's total annual cost for completing and submitting National Source Tracking Transaction Reports by telephone with followup by fax or mail is estimated to be $360 (i.e., 12 reports x $29.96/report).

Based on the above, the NRC estimates that industry's total annual cost for completing and submitting National Source Tracking Transaction Reports would be $35,613 (i.e., $25,825 + $4,133 + $2,453 + $2,844 + $360). For purposes of this analysis, the NRC assumes that this *annual* industry operating cost would be incurred for the first time in 2007.

3.2.3.5 Correction of Previously Filed National Source Tracking Transaction Reports

The proposed regulatory action would require licensees to correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery. The NRC anticipates that all reports would be corrected and re-submitted using on-line forms.

The NRC estimates that, on average, 0.05 hour (3 minutes) of licensee staff time would be required to correct and re-submit a previously filed National Source Tracking Transaction Report on-line. Using an estimated average labor rate of $87 per hour for licensee staff, the cost for conducting these activities is estimated to be $4.35 per report (i.e., 0.05 hour x $87/hour).[18] As shown in Table 3, the NRC estimates that, each year, licensees would submit 2,587 National Source Tracking Transaction Reports. Based on best judgment, the NRC estimates that licensees would correct and re-submit one percent of these reports (i.e., 2,587 x 0.01 = 26 reports). Thus, the industry's total annual cost for correcting and re-submitting previously filed National Source Tracking Transaction Reports is estimated to be $113 (i.e., 26 reports x $4.35/report).

Note that, for purposes of this analysis, the NRC assumes that this *annual* industry operating cost would be incurred for the first time in 2007.

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[17] Includes a cost of $0.22 for making a three-minute State-to-State telephone call and a cost of $3.64 for mailing the National Source Tracking Transaction Report.

[18] The NRC considers Internet access to be a standard business practice. Therefore, for purposes of this analysis, the cost associated with the purchase of Internet access services is not considered an incremental cost to licensees.

3.2.3.6 Annual Inventory Reconciliation of Nationally Tracked Sources

Under existing regulations, licensees are required to conduct inventories of their sealed sources. The proposed regulatory action would require each licensee to reconcile and verify its inventory of nationally tracked sources against the data in the National Source Tracking System. This verification would be conducted during the month of June each year. As part of the verification process, the licensee would be required to resolve any discrepancies between the National Source Tracking System and the actual inventory by filing the necessary National Source Tracking Transaction Report(s).

The NRC estimates that licensees would require, on average, one hour to reconcile and verify inventory information on their nationally tracked sources.[19] Using an estimated average labor rate of $87 per hour for licensee staff, the labor cost for reconciling and verifying this information is estimated to be $87 per licensee (i.e., 1 hour x $87/hour). As shown in Table 1, the NRC estimates that 1,350 licensees would reconcile and verify inventory information for nationally tracked sources. Thus, the labor cost to licensees is estimated to be $117,450 (i.e., 1,350 licensees x $87/licensee).

In addition, the NRC estimates that licensees would incur materials costs, based on the submission method selected. These costs are described below:

- *On-Line Forms and Computer-Readable Format Files.* The NRC considers Internet access to be a standard business practice. Therefore, for purposes of this analysis, the cost associated with the purchase of Internet access services is not considered an incremental cost to licensees.

- *Fax.* The NRC estimates that each of the 64 licensees submitting information by fax (see Table 1) would incur a materials cost of $0.15 for faxing the information to the National Source Tracking System.[20] Thus, the materials cost to licensees submitting information by fax is estimated to be $9.60 (i.e., 64 licensees x $0.15/licensee).

- *Mail.* The NRC estimates that each of the 64 licensees submitting information by mail (see Table 1) would incur a materials cost of $3.64 for mailing the information to the National Source Tracking System.[21] Thus, the materials cost to licensees submitting information by mail is estimated to be $232.96 (i.e., 64 licensees x $3.64/licensee).

- *Telephone with Followup by Fax or Mail.* The NRC estimates that each of the seven licensees submitting information by telephone with followup by fax or mail would incur a materials cost of $4.16 for making a telephone call and mailing the information to the

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[19] Note that some licensees may require more or less time to reconcile and verify inventory information on their nationally tracked sources. The time required by each licensee would depend on licensee-specific factors (e.g., number of sources, licensee's efficiency).

[20] Based on the cost of a two-minute State-to-State telephone call.

[21] Includes costs associated with mailing a five-ounce package by certified mail in a manila envelope ($1.29 for postage, $2.30 for the certified-mail fee, and $0.05 for a manila envelope).

National Source Tracking System.[22] Thus, the materials cost to licensees submitting information by telephone with followup by fax or mail is estimated to be $29.12 (i.e., 7 licensees x $4.16/licensee).

Based on the above, the materials cost to licensees is estimated to be $271.68 (i.e., $0 + $9.60 + $232.96 + $29.12).

In summary, the NRC estimates that industry's total annual cost for reconciling and verifying its inventory of nationally tracked sources would be $117,722 (i.e., $117,450 + $271.68). For purposes of this analysis, the NRC assumes that this *annual* industry operating cost would be incurred for the first time in 2007.

3.2.3.7 Nationally Tracked Source Unique Serial Numbers

The proposed regulatory action would require each licensee who manufactures a nationally tracked source after the effective date of the rule to assign a unique serial number to each nationally tracked source. Serial numbers may be composed only of alpha-numeric characters.

The NRC estimates that, on average, two minutes of licensee staff time would be required to assign a unique serial number to a nationally tracked source. Using an estimated average labor rate of $87 per hour for licensee staff, the cost for assigning a serial number is estimated to be $2.90 per source (i.e., [2 minutes/60 minutes] x $87/hour). The NRC estimates that 15,000 nationally tracked sources are manufactured each year. Thus, the industry's total *annual* cost for assigning unique serial numbers to nationally tracked sources is estimated to be $43,500 (i.e., 15,000 sources x $2.90/source).

3.3 Results

Under the National Source Tracking System alternative (Option 2), the NRC would require licensees to report information on the manufacture, transfer, receipt, and disposal of nationally tracked sources.

Using the cost assumptions discussed in Section 3.2 of this document, the NRC staff estimated the incremental costs to industry and the NRC under Option 2. These costs were estimated for the years 2005 through 2016. All costs incurred in the future were calculated in 2005 dollars using discount rates of 7 and 3 percent. Discounting all costs to year 2005 adjusts for the fact that costs incurred at different points in time are not equivalent. The results are presented in Table 4.

As shown in Table 4, the net present value under Option 2, using a 7 percent discount rate, is estimated to be a total cost of $19,661,740. Using a 3 percent discount rate, the net present value is estimated to be a total cost of $23,524,940.

The NRC staff believes that the expected qualitative values contribute substantially to the benefits of the National Source Tracking System. These qualitative values include:

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[22] Includes a cost of $0.52 for making a seven-minute State-to-State telephone call and a cost of $3.64 for mailing the inventory information to the National Source Tracking System.

- *Improved Security for Nationally Tracked Sources.* The National Source Tracking System is expected to result in improved accountability and controls over nationally tracked sources. This is expected to improve public health (accident/event) and avert potential offsite property damage and costs by decreasing the risk of a security-related event involving nationally tracked sources.

- *Improved Understanding of the Location of Nationally Tracked Sources.* Information contained in the National Source Tracking System would improve the information available to the NRC, as well as other government entities (e.g., Department of Homeland Security, Agreement States), concerning the locations of nationally tracked sources.

- *Improved Regulatory Efficiency.* The establishment of a national program to monitor the location of nationally tracked sources would improve regulatory efficiency by: (1) increasing accountability among all parties associated with a nationally tracked source transaction and (2) responding to a recommendation in the IAEA's Code of Conduct.

- *Enhanced Ability to Promote and Maintain the Common Defense and Security.* Information contained in the National Source Tracking System would allow the NRC to better monitor the location of nationally tracked sources and, thus, improve accountability and controls over them. Consequently, the National Source Tracking System would enhance the NRC's ability to maintain and promote the common defense and security.

- *Increased Public Confidence.* Information contained in the National Source Tracking System would allow the NRC to better monitor the location of nationally tracked sources. This is expected to result in increased public confidence in NRC’s regulation of inventories of radioactive materials that could be used in the production of RDDs and REDs.

Table 4
Present Value of the Costs Under the National Source Tracking System Alternative (Option 2): 2005 - 2016 [a]
(2005 dollars)

Category	7% Discount Rate			3% Discount Rate		
	Costs to Industry	Costs to the NRC	Total Costs	Costs to Industry	Costs to the NRC	Total Costs
Rulemaking and IT Development/Maintenance Activities	$0	$18,266,000	$18,266,000	$0	$21,787,000	$21,787,000
National Source Tracking System Account Set-Up	$49,000	$0	$49,000	$51,000	$0	$51,000
Initial Inventory of Nationally Tracked Sources	$53,000	$0	$53,000	$56,000	$0	$56,000
National Source Tracking Transaction Reports	$234,000	$0	$234,000	$295,000	$0	$295,000
Correction of Previously Filed National Source Tracking Transaction Reports	$740	$0	$740	$940	$0	$940
Annual Inventory Reconciliation of Nationally Tracked Sources	$773,000	$0	$773,000	$975,000	$0	$975,000
Nationally Tracked Source Unique Serial Numbers	$286,000	$0	$286,000	$360,000	$0	$360,000
Total	$1,395,740	$18,266,000	$19,661,740	$1,737,940	$21,787,000	$23,524,940

[a] Table includes rounding error.

4. Backfit Analysis

The proposed regulatory action includes new reporting requirements and does not impose any backfits on systems, structures, or components of a facility. That is, the proposed regulatory action does not contain any provisions involving backfitting, as defined at 10 CFR 50.109, 70.76, 72.62, and 76.76. Therefore, a backfit analysis is not required.

5. Decision Rationale

For the two regulatory alternatives identified, the values and impacts have been considered. Option 2, the National Source Tracking System alternative, was determined to be the preferred option because it is expected to: (1) enhance the NRC's ability to promote and maintain the common defense and security, (2) improve understanding of the location of nationally tracked sources, (3) improve regulatory efficiency (by increasing accountability among all parties associated with a nationally tracked source transaction), (4) improve public health and safety, and (5) increase public confidence. The NRC believes that the incremental costs to licensees and the NRC under Option 2 are justified because the requested actions and information are necessary to monitor the location of nationally tracked sources and, thus, promote and maintain the common defense and security.

6. Implementation

The proposed regulatory action would be enacted through a Proposed Rule, public comments, and a Final Rule, with promulgation of the Final Rule by July 2006. No impediments to implementation of the recommended alternative have been identified.

The proposed regulatory action would require licensees who manufacture, transfer, receive, or dispose of a nationally tracked source to: (1) report their initial inventory of Category 1 and/or 2 nationally tracked sources to the National Source Tracking System; (2) complete and submit a National Source Tracking Transaction Report after each transaction; (3) correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery; and (4) reconcile and verify the inventories of nationally tracked sources they possess against the data in the National Source Tracking System on an annual basis. In addition, licensees who manufacture nationally tracked sources after the effective date of the rule would be required to assign a unique serial number to each nationally tracked source.

The NRC is currently in the process of developing the National Source Tracking System and expects to finalize its development by December 2006. When completely operational, the National Source Tracking System will be a web-based system that will allow licensees to easily meet the proposed reporting requirements.

The estimated resources entailed in this regulatory action are in the order of 5.5 full-time equivalent employees (FTEs) and are included under NRC costs. An additional 1.2 FTE will be used for development of the final rule. These resources will come principally from the Office of Nuclear Material Safety and Safeguards (NMSS). These resources are within NMSS's budget for the National Source Tracking System.