Regulatory Analysis for the Proposed Rule on Expanding the National Source Tracking System – 10 CFR Parts 20 and 32

Draft Report

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1. Introduction

The National Source Tracking System (NSTS) was established in a final rule published in the *Federal Register* on November 8, 2006 (71 FR 65686). Under the NSTS program, certain licensees who possess International Atomic Energy Agency (IAEA) Category 1 and 2 sources are required to report information on the manufacture, transfer, receipt, disassembly, and disposal of nationally tracked sources. The implementation date for the NSTS has been extended to January 31, 2009 (72 FR 59162).

The U.S. Nuclear Regulatory Commission (NRC) is now proposing to amend its regulations to expand the existing NSTS to require additional licensees to report information on manufacture, transfer, receipt, disassembly, and disposal of nationally tracked sources. The licensees being considered for inclusion in the NSTS are those that possess IAEA Category 3 or lower (i.e., a subset of IAEA Category 4 or all of Category 4) sources.

The purpose of this regulatory analysis is to evaluate the quantities of material and impacts associated with regulatory alternatives for expanding the NSTS. The NRC considers the regulatory analysis process an integral part of its statutory mission 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 September 11, 2001 attacks in the U.S., 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, 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. NRC's review has taken 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 IAEA. The NRC has worked with international agencies in developing international guidance for the safety and security of radioactive materials of concern as embodied in the IAEA *Code of Conduct on the Safety and Security of Radioactive Sources* (Code of Conduct).

The IAEA source categorization scheme contained in the Code of Conduct includes five categories. These categories are based on the potential for sources to cause deterministic health effects to persons exposed to them. Sources in Category 1 are considered to be the most 'dangerous' because they can pose a very high risk to human health if not managed safely and securely. At the lower end of the categorization system, sources in Category 5 are the least dangerous; however, even these sources could give rise to doses in excess of the dose limits if not properly controlled. Based on analysis of potential health effects, each of the IAEA Categories contain radioactive material in sealed sources in quantities that can be characterized as follows: Category 1: greater than or equal to the Category 1 threshold (e.g., for Cobalt-60 (Co- 60): 810 Curies (Ci)); these sources are typically used in practices such as radiothermal generators, irradiators and radiation therapy; Category 2: less than the Category 1 threshold but equal to or greater than the Category 2 threshold (which is 1/100th of

the Category 1 threshold); (e.g., for Co-60: 8.1 Ci); these sources are typically used in practices such as industrial gamma radiography and high and medium dose rate brachytherapy; Category 3: less than the Category 2 threshold but equal to or greater than the Category 3 threshold (which is 1/10th of the Category 2 threshold); (e.g., for Co-60: 0.81 Ci); these sources are typically used in practices such as fixed industrial gauges involving high activity sources; Category 4: less than the Category 3 threshold but equal to or greater than the Category 4 threshold (which is 1/100th of the Category 3 threshold); (e.g., for Co-60: 0.0081 Ci); Category 5: less than the Category 4 threshold down to IAEA exempt quantities.

The scope of IAEA's Code of Conduct is limited to Categories 1-3, i.e., those having the highest potential to cause permanent injury or death when used in a malevolent manner. 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.

As a result of these activities, NRC issued a final rule published in the *Federal Register* on November 8, 2006 (71 FR 65856), establishing a national system for source tracking for Category 1 and 2 sources. In that rulemaking, specific rationale was provided for establishing tracking and inventory requirements for Category 1 and 2 sources. It was noted that a DOE/NRC analysis of potential health effects from use of sources in a RDD or a RED identified radionuclide "quantities of concern" to be in a range similar to the IAEA Category 2 threshold values. Therefore, to allow alignment between domestic and international efforts to increase safety and security of radioactive sources, NRC adopted the IAEA Category 2 values and used them as a threshold in its rulemaking decision regarding sources requiring tracking and inventorying in a national source tracking system.

Under the NSTS established by the November 8, 2006, final rule, certain licensees who possess IAEA Category 1 and 2 sources are required to report information on the manufacture, transfer, receipt, disassembly, and disposal of nationally tracked sources. This information is to be used to support the NSTS and will provide the NRC with a life cycle account for nationally tracked sources and, thus, improve accountability and controls over them. The final rule to establish the NSTS reflected those IAEA Code of Conduct recommendations that are consistent with NRC's responsibilities under the Atomic Energy Act, including protection of public health and safety. As noted above, the current implementation date for the NSTS is January 31, 2009.

1.2 Objectives of the Proposed Regulatory Action

In this current rulemaking, NRC has considered the need to enhance the tracking of Category 3 (or lower) sources to improve accountability and control of these sources and to provide additional protection against aggregation of these sources to higher activity levels (Category 1 or Category 2).

At issue in this rulemaking is the extent appropriate for expanding the NSTS beyond IAEA Category 2, i.e., should the NSTS be expanded to include IAEA Category 3 sources or should it be expanded even further to include sources that are in IAEA Category 4, in particular sources at the high end of the Category 4 activity range (specifically, 1/10th of the Category 3 threshold, referred to in the rest of this Regulatory Analysis as "1/10th of Category 3"). Consideration was

also given to expanding the NSTS to include sources in the low end of the Category 4 activity range or in IAEA Category 5. Analyses for expanding the NSTS to include Category 3 sources and to include lower category sources are provided in Sections 2 and 3, which follow.

In determining whether to expand the NSTS to Category 3 (or lower) sources, NRC has considered balancing the secure handling and use of 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.

With regard to expanding the NSTS to include IAEA Category 3 sources, there can be concerns regarding the accountability and control of these sources because IAEA defines Category 3 sources (as well as the Category 1 and 2 sources) as ‘”dangerous sources”, i.e., a source that could if not under control give rise to exposure sufficient to cause severe deterministic effects, although, as noted above, it left to its individual member States whether it would be necessary to actually set up a tracking system for these sources, In addition, Category 3 sources could be easily aggregated to Category 2 levels, as part of a concerted effort to do so, as they represent sources with activity levels that range from just below the Category 2 threshold down to 1/10th of the Category 2 threshold. Thus, sources at the high end of the range of activities in Category 3 can be at levels just below the threshold of a Category 2 source, meaning that it would take only a few sources to aggregate to Category 2. The major categories of licensees who possess Category 3 sources include those with fixed industrial gauges (level gauges, conveyor gauges, thickness gauges, blast furnace gauges, dredger, pipe gauges); those who conduct well-logging operations; medical facilities with brachytherapy machines; and some radiographers with relatively low activity sources. Because these sources are thus relatively widespread in use and relatively broadly used in industry, there would be potential for aggregation of sufficient numbers of them to Category 2 levels. Adding these sources to the NSTS with its inventory and tracking requirements would provide for increased accountability and control of these sources because there would be a near real-time knowledge of source whereabouts and an ability to confirm an individual licensee’s account of his sources.

With regard to considerations of expanding the NSTS to sources below the Category 3 threshold, a principal rationale for including sources at the high-end of the Category 4 range of activities (i.e., at 1/10th of Category 3) is the potential that a sufficient number of these higher-activity Category 4 sources could be obtained and aggregated to create the equivalent of Category 2 sources. These “high-end” Category 4 sources can be at levels just below the threshold of a Category 3 source, which is about 1/10th of the threshold of a Category 2 source, meaning that it would require about 10-12 of these sources to aggregate to Category 2 quantity. These high-end Category 4 (1/10th of Category 3) sources are possessed by the same licensees noted to have Category 3 sources, namely those with fixed industrial gauges, those who conduct well-logging operations, medical facilities with brachytherapy machines, and few radiographers, and as previously noted, are relatively widespread in use and broadly used in industry, thus allowing for the potential for aggregation of sufficient numbers of them to Category 2 levels.

Expanding the NSTS to additional licensees would include both rulemaking and information technology (IT) development and maintenance activities, as was the case for the original development of the NSTS for Category 1 and 2 sources. Like the current NSTS, the expanded NSTS would be a web-based system that would allow licensees to meet the proposed reporting requirements on-line. This proposed rulemaking would impose requirements on both NRC and Agreement State licensees and would establish the regulatory foundation for expanding the NSTS. The expanded NSTS is being developed and would be implemented under NRC's statutory authority to protect public health and safety.

As described in NRC's Action Plan in SECY-07-0147, August 25, 2007, expanding the existing NSTS is part of a comprehensive radioactive source control program for radioactive materials of concern. Although neither the existing NSTS, nor an expanded NSTS, can ensure the physical protection of sources, they can provide greater source accountability which should foster increased control of sources by licensees.

2. Identification and Preliminary Analysis of Alternative Approaches

This regulatory analysis evaluates the values and impacts of two regulatory alternatives, one of which includes five sub-alternatives. The following subsections describe these alternatives.

2.1 Option 1: No Action

Under Option 1, NRC would not expand the NSTS to additional licensees possessing Category 3 (or lower) sources. Thus, these additional licensees would not be required to report transaction information associated with the manufacture, transfer, receipt, disassembly, and disposal of nationally tracked sources.

2.2 Option 2: Expand the NSTS to Include Category 3 (or lower) sources

Under Option 2, NRC would expand the NSTS to include Category 3 (or lower) sources.

Option 2 has three sub-options depending on what Category the NSTS was expanded to as follows:

Sub-Option 2a: Expand National Source Tracking System to IAEA Category 3
Sub-Option 2b: Expand National Source Tracking System to 1/10th of IAEA Category 3
Sub-Option 2c: Expand National Source Tracking System to IAEA Category 4

Each sub-option would be made up of two alternate approaches:

(1) require the additional licensees possessing Category 3 (or lower) sources to follow the same requirements as in the existing NSTS, including making initial and annual inventories, tracking transaction reports; and assigning serial numbers to sources;

(2) require the additional licensees possessing Category 3 (or lower) sources to only follow inventory requirements of the NSTS

Under these sub-option/approaches, a licensee who manufactures, transfers, receives, disassembles, or disposes of nationally tracked source would be required to:

- Report its initial inventory of Category 3 (or lower) nationally tracked sources to the NSTS by July 2009.
- On an annual basis, reconcile and verify the inventory of Category 3 (or lower) nationally tracked sources it possesses against the data in the NSTS
- Complete and submit a National Source Tracking Transaction Report (i.e., NRC Form 748) after each transaction of a Category 3 (or lower) source
- Correct any errors in previously filed National Source Tracking Transaction Reports within five business days of the discovery
- For licensees who manufacture a Category 3 (or lower) nationally tracked source, assign a unique serial number to each nationally tracked source.

3. Analysis of Values and Impacts

The subsections below describe the analysis conducted to identify and evaluate the values and impacts expected to result from the implementation of expanding the NSTS to additional licensees. Subsection 3.1 identifies the attributes that the expanded NSTS is expected to affect. Subsection 3.2 describes the methodology used to analyze the values and impacts associated with expanding the NSTS. 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 expanded NSTS 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, and in Chapter 4 of NUREG/BR-0058, Rev. 5, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," dated September 2004. Each attribute listed in Chapter 5 was evaluated. The basis for selecting those attributes expected to be affected by expanding the NSTS is presented below.

Expanding the NSTS is expected to affect the following attributes:

- *Public Health (Accident/Event)*. Expanding the NSTS would require additional licensees having Category 3 (or lower) sources to report information on the manufacture, transfer, receipt, disassembly, 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 which should have a positive effect on public health.

- *Offsite Property*. As stated above, licensees with Category 3 (or lower) sources 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).

- *Industry Implementation*. The proposed regulatory action would require licensees with Category 3 (or lower) sources to report their initial inventory of Category 3 (or lower) nationally tracked sources to the NSTS. Licensees who reported nationally tracked source information to the One-time Data Collection would need only to verify or update their reported inventory information. Licensees who did not provide nationally tracked source information to the One-time Data Collection would need to report their inventory information by the specified dates. As a result, licensees (i.e., industry) would incur one-time implementation costs under the proposed regulatory action.

- *Industry Operation*. The proposed regulatory action would require licensees with Category 3 (or lower) sources 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 NSTS 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) would incur annual operating costs under the proposed regulatory action.

- *NRC Implementation*. To implement the proposed regulatory action, NRC would perform rulemaking and IT development activities to expand the original NSTS. Specifically, NRC would develop a proposed and final rule to implement the expansion of the NSTS to cover additional licensees with Category 3 (or lower) sources and arrange to expand the web-based NSTS, as well as extend the guidance on how to report information on nationally tracked source transactions to the NSTS.[2] As a result, NRC would 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 expanded NSTS and arrange for operation and maintenance activities on the expanded web-based NSTS. As a result, NRC would 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 expanded NSTS. This information may allow them to better monitor the location of nationally tracked sources and focus resources on licensees based on their possession of nationally tracked sources. In addition, the information contained in the expanded NSTS would improve coordination among the various agencies.

- *Improvements in Knowledge*. The proposed regulatory action would require licensees with Category 3 (or lower) sources to report information on the manufacture, transfer, receipt, disassembly, and disposal of nationally tracked sources. This information would allow NRC to better understand the location of nationally tracked sources.

[2] 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.

- *Regulatory Efficiency*. The proposed regulatory action would improve regulatory efficiency by expanding the NSTS to monitor the location of Category 3 (or lower) 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.

- *Safeguards and Security Considerations*. The proposed regulatory action would require licensees to provide a life cycle account for Category 3 (or lower) nationally tracked sources. This information would allow 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 NRC's ability to protect public health and safety.

- *Other Considerations*. The proposed regulatory action would require licensees with Category 3 (or lower) sources to provide a life cycle account for nationally tracked sources. This information would allow 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.

Expanding the NSTS to Category 3 (or lower) sources 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 expanded NSTS. 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 expanded NSTS. The qualitative analysis involves a discussion of those attributes that 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 NSTS relative to a baseline

(Option 1, the no-action alternative), which is how the world would be in the absence of the expanded NSTS.

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

Major categories of specific licensees who possess Category 3 (or lower) sources include:

- fixed industrial gauges (level gauges, conveyor gauges, thickness gauges, blast furnace gauges, dredger gauges, pipe gauges)
- well-logging
- brachytherapy - high/medium range and low dose range
- radiography

NRC is conducting the One-time Data Collection to obtain data on these specific licensees and the devices and sources they possess.

As noted in Section 2.2 above, NRC is considering 5 sub-options under Option 2 (namely expanding the NSTS to licensees with Category 3, 1/10th of Category 3, and lower than 1/10th of Category 3 sources, as well as whether to require licensees with these Category 3 (or lower) sources to follow all requirements of the NSTS or only the inventory requirements). Based on preliminary information from NRC's One-time Data Collection and NRC staff's best judgment, NRC estimates that there are approximately:

- 1000 NRC and Agreement State licensees that may possess Category 3 nationally tracked sources
- 2500 NRC and Agreement licensees that may possess nationally tracked sources at 1/10th of Category 3;

(based on the current total of 34 Agreement States, approximately 80% of these licensees are Agreement State licensees).

The One-time Data Collection is not collecting data on lower than 1/10th of Category 3 sources (i.e., Category 4 or 5). Therefore, quantitative analysis of these sources cannot be undertaken as part of this analysis. The discussion below presents a qualitative analysis of these lower than 1/10th of Category 3 sources.

3.2.2.2 Number of Nationally Tracked Sources

Based on preliminary information from NRC’s One-time Data Collection and NRC staff’s best judgment, NRC estimates that, collectively, licensees possess approximately:

- 5,200 Category 3 nationally tracked sources possessed by NRC and Agreement State licensees (as above, approximately 80% of the sources would be in Agreement States);
- 11,500 nationally tracked sources possessed by NRC and Agreement State licensees at 1/10th of Category 3 (approximately 80% would be in Agreement States).

3.2.2.3 Number of National Source Tracking Transaction Reports

To determine the number of source transactions (and therefore, the number of source transaction reports) it is first necessary to estimate the nature of the transactions that would be made under the requirements of the expanded NSTS. As input, we considered the Regulatory Analysis prepared in support of the final rule for the NSTS for IAEA Category 1 and 2 sources. In estimating the number of transactions, that Regulatory Analysis made certain assumptions regarding material flow balancing of replacement, manufacturing, transfer and receipt, disassembly, and disposal of sources. The Regulatory Analysis for Category 1 and 2 sources also made certain assumptions regarding the nature of submittal of the transaction reports, including the type of submittal (on-line, computer readable, fax, mail) and the amount of time spent on each transaction report. Although the licensees possessing Category 3 (or lower) sources are different than those with Category 1 and 2 sources, this Regulatory Analysis has used similar assumptions regarding general flow balancing of sources. This Regulatory Analysis has also used similar assumptions regarding the nature of the submittals of the transaction reports based on the general computer literacy and pervasive use of computers in U.S. society for a range of activities. In addition, in estimating the amount of time taken to complete transaction reports, this Regulatory Analysis used values similar to the earlier analysis because as new licensees become more familiar with the system, the times to complete these actions may have a tendency to become equal between licensees with Category 3 (or lower) sources and those with Category 1 and 2 sources.

In reviewing preliminary information from the One-time Data Collection, the principal categories of licensee/source types are fixed industrial gauges (including level gauges, conveyor gauges, blast furnace gauges, dredger gauges, pipe gauges) well logging, brachytherapy for medical use, and radiography. The approach used in estimating the number of source transactions considers the licensee/sources types and the half-life of the radionuclides used in those sources. In general, the longer the half-life of the radionuclide, the less frequently the source is replaced. Also, well-logging sources and fixed gauge sources usually are changed infrequently for reasons other than radionuclide decay based on their general location in a facility and because damage to the source does not generally occur. As a result, it is assumed that fixed gauge sources (which primarily contain Cs-137 and Co-60, with half-lives of 30 and 5 years, respectively) are replaced every ten years; well logging sources (which primarily contain Am-241, with a half-life of 458 years) are replaced every ten years; brachytherapy sources (which primarily contain Ir-192, with a half-life of 74 days) are replaced every four months; and radiography sources (which primarily contain Ir-192) are replaced every four months. Based on the estimated inventory of the number of sources in Section 3.2.2.2 and the estimated frequency of the replacement of sources noted here, NRC estimates that, each year, the licensees annually perform approximately 6,233 Category 3 source replacements and 11,677 of 1/10th of Category 3 source replacements.

As required by the proposed expanded NSTS, transactions must be reported when a source is manufactured, transferred, received, disassembled, or disposed of. In estimating the number of transactions of each type, simplifying assumptions are made that: the number of manufactures is approximately the same as the number of replacements; the number of source transfers and receipts are equal to each other; there is disassembly of sources when no longer serviceable; there is some decay of sources; and there is some disposal of sources at licensed low-level waste burial. Based on these assumptions and the net balance of sources, Tables 1 and 2 estimate the number of major transactions each year.

Table 1
Estimated Annual Number of Category 3 Source Transactions

Type of Transaction	Number of Transactions
Manufacture	6,233
Transfer	11,843
Receipt	11,843
Disassemble	5,610
Disposal	312
Total	35,841

Table 2
Estimated Annual Number of 1/10th of Category 3 Source Transactions

Type of Transaction	Number of Transactions
Manufacture	11,677
Transfer	22,186
Receipt	22,186
Disassemble	10,510
Disposal	584
Total	67,143

For each of the transactions identified in Tables 1 and 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 follow-up by fax or mail. 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. However, 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, NRC made the following simplifying assumptions:

Manufacture:

-- Each year, licensees would perform 6233 Category 3 (11,677 of 1/10th of Category 3) source transactions associated with the manufacture of new nationally tracked sources
-- All reports associated with the manufacture of new Category 3 and/or 1/10th of Category 3 nationally tracked sources would be submitted using computer-readable

format files
-- The Regulatory Analysis for Category 1 and 2 sources assumed that reports would contain information on 100 transactions; however it is assumed that reports on Category 3 sources would contain 50 transactions as there are fewer transactions.

Transfer and receipt

-- Each year, licensees would perform 23,686 Category 3 (44,372 of 1/10th of Category 3) 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: about half would be submitted by manufacturers and distributors using computer-readable files, and about half would be submitted by users who use on-line forms. In addition, it is estimated that about 2-3% of the reports would be submitted by fax, mail, or phone with follow-up by fax or mail.
-- Reports submitted using computer-readable format files would contain information on the number of transactions in the manner noted above. The Regulatory Analysis for Category 1 and 2 sources assumed that reports using on-line, or other, forms would contain information on three transactions; however it is assumed these reports for Category 3 sources would contain two transactions as there are fewer transactions.
-- The number of transfer reports equals the number of receipt reports

Disassembly

-- Each year, licensees perform an estimated 5610 Category 3 (10510 of 1/10th of Category 3) transactions associated with the disassembly of nationally tracked sources
-- All reports associated with the disassembly of nationally tracked sources would be submitted using computer readable format files
-- Reports submitted using computer-readable files would contain information on the number of transactions in the manner noted above.

Disposal

-- Each year, licensees would perform 312 Category 3 (584 of 1/10th of Category 3) 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 in the manner noted above.

These assumptions are reflected in Tables 3 and 4.

Table 3
Estimated Number of Category 3 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 Follow-up by Fax or Mail	
Manufacture	0	125	0	0	0	125
Transfer	2961	118	41	41	5	3166
Receipt	2961	118	41	41	5	3166
Disassemble	0	112	0	0	0	112
Disposal	156	0	0	0	0	156
Total	6078	473	82	82	10	6725

Table 4
Estimated Number of 1/10th of Category 3 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 Follow-up by Fax or Mail	
Manufacture	0	117	0	0	0	117
Transfer	3698	111	78	78	10	3975
Receipt	3698	111	78	78	10	3975
Disassemble	0	105	0	0	0	105
Disposal	195	0	0	0	0	195
Total	7591	444	156	156	20	8367

3.2.3 Analysis

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

- Rulemaking and IT development/maintenance activities
- National source tracking system account set-up
- Initial inventory of nationally tracked sources

- Annual inventory reconciliation of nationally tracked sources
- National Source Tracking Transaction Reports
- Correction of previously filed National Source Tracking Transaction Reports
- For manufacturers, assigning 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 Regulatory Analysis are in 2005 dollars. Year 2005 dollars were used in this Regulatory Analysis to facilitate comparison with the Regulatory Analysis for the NSTS for Category 1 and 2 sources. Results using year 2007 dollars as a base would be comparable as the unit costs of labor ($93 for year 2007 vs. $87 for year 2005) are comparable.

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 for expanding the NSTS to include licensees with Category 3 (or lower) sources.

Significant costs of IT development were already tabulated as part of the preparation of the NSTS rule for licensees with Category 1 and 2 sources. Significant additional IT development costs and resources are not expected for expanding the NSTS to Category 3 (or lower) sources due to the capabilities being incorporated into the NSTS software; however costs would be incurred for adding and certifying additional licensees so that they can access the system to enter or verify data.

The NRC estimates that, between 2008 and 2010, the NRC would incur approximately $0.6 M to expand the IT requirements for the NSTS to Category 3 ($1.5 M for 1/10th of Category 3). This estimated cost includes costs for entering new licensees into the NSTS and credentialing new users, including the process of validating users, and providing certificates and hardware tokens. This value represents both NRC staff and contractor time and effort. In addition to initial set-up costs to implement the NSTS, there would also be annual costs to NRC for maintenance and operation of the system. The Regulatory Analysis for the rulemaking for Category 1 and 2 licensees estimated that these annual costs would be approximately $2.7 M for the 1350 licensees estimated for that system. Based on that analysis, including considerations related to DOE sources, it is estimated that the annual costs for the expanded NSTS, based on the numbers of licensees with Category 3 and 1/10th of Category 3 sources, would be approximately $2M per year for the addition of Category 3 sources ($5 M for 1/10th of Category 3 sources) beginning in FY 2010[4] beyond what is already expended on the existing NSTS. 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 NSTS. Once an account is established, the licensee would be provided with password information that would allow access to the system.

[4] FY 2010 covers the period between October 1, 2009 and September 30, 2010.

The NRC estimates that, on average, 0.5 hour (30 minutes) of licensee staff time would be required to establish an account with the NSTS. Using an estimated average labor rate of $87 per hour for licensee staff[5], the cost for establishing an account is estimated to be $43.50 per licensee (i.e., 0.5 hour x $87/hour). NRC anticipates that, of the 1000 Category 3 (2500 of 1/10th of Category 3) licensees, over 90% of Category 3 and 1/10th of Category 3 licensees would report transaction information electronically using on-line forms or computer-readable format files. Thus, industry's total cost for establishing accounts with the NSTS is estimated to be $42,360 for Category 3 and $106,575 for 1/10th of Category 3.

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 NSTS in 2009.

In addition to account set-up, licensees planning to use the computer readable format files would also expend some programming effort to establish the ability to report using this method. Some programming would be necessary to collect the information from current computer files. As noted above, licensees using computer-readable files would primarily include manufacturers and distributors expecting to file larger numbers of reports. The Regulatory Analysis for Category 1 and 2 sources estimated the licensee staff time that would be required to conduct the necessary programming and, since most of the licensees affected by the expansion of the NSTS would also be covered under the existing NSTS, a smaller value of 20 hours for programming is used in this Regulatory Analysis. Using an estimated average labor rate of $87 per hour for licensee staff, the cost of programming is estimated to be $1740 per licensee (i.e., 20 hours x $87/hour). Based on the Regulatory Analysis for Category 1 and 2 sources, it is estimated that industry's total programming cost would be $87,000. It is assumed that this effort would occur in 2009.

Licensees may also expend some effort on training. Each licensee is assumed to expend 4 hours per person to conduct the training and to train two individuals in use of the system. Using an average labor rate of $87 per hour for licensee staff, industry's total training cost is estimated to be $696,000 (i.e., 1000 licensees x 8 hours x $87/hour) for Category 3 licensees ($1,700,000 for 1/10th of Category 3 licensees). It is assumed that this effort would occur in 2009.

[5] 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.

3.2.3.3 Initial Inventory of Nationally Tracked Sources

Under existing regulations, licensees are required to conduct an inventory of their sealed sources. For example, well loggers must conduct an inventory under 10 CFR 39.37, brachytherapy users must conduct an inventory under 10 CFR 35.67, and radiographers must conduct an inventory under 10 CFR 34.29. The proposed regulatory action would require licensees to report their initial inventory of Category 3 (or lower) nationally tracked sources to the NSTS. Licensees whose nationally tracked source information was reported to the One-time Data Collection would need only to verify or update their inventory information because, to ease the reporting process, information already in the One-time Data Collection system would be downloaded to the NSTS. Licensees whose nationally tracked source information was not reported to the One-time Data Collection System would need to report their initial inventory of Category 3 and/or nationally tracked sources to the NSTS by July 2009.

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.[6] 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 indicated in Section 3.2.2.1, the NRC estimates that 1000 licensees with Category 3 sources (2500 licensees with 1/10th of Category 3 sources) would verify/update or initially report inventory information for nationally tracked sources. Thus, the labor cost to licensees is estimated to be $43,500 (i.e., 1000 licensees x $43.50/licensee) for licensees with Category 3 sources ($108750 (i.e., 2500 licensees x $43.50/licensee) for licensees with 1/10th of Category 3 sources.

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 48 licensees with Category 3 sources (119 licensees with 1/10th of Category 3 sources) submitting information by fax would incur a materials cost of $0.15 for faxing the information to the NSTS.[7] Thus, the materials cost to licensees submitting information by fax is estimated to be $7 for licensees with Category 3 sources (i.e., 48 licensees x $0.15/licensee) and $18 for licensees with 1/10th of Category 3 sources (i.e., 119 licensees x $0.15/licensee).

[6] 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).

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

- *Mail.* The NRC estimates that each of the 48 licensees with Category 3 sources (119 licensees with 1/10th of Category 3 sources) submitting information by mail would incur a materials cost of $3.64 for mailing the information to the NSTS[8] Thus, the materials cost to licensees submitting information by mail is estimated to be $173 for licensees with Category 3 sources (i.e., 48 licensees x $3.64/licensee) and $432 for licensees with 1/10th of Category 3 sources (i.e., 119 licensees x $3.64/licensee).

Based on the above, the materials cost to licensees is estimated to be $180 for licensees with Category 3 sources and $450 for licensees with 1/10th of Category 3 sources

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 $43,680 for licensees with Category 3 sources and $109,200 for licensees with 1/10th of Category 3 sources. For purposes of this analysis, the NRC assumes that 50 percent of this one-time industry implementation cost would be incurred in 2009 and 50 percent would be incurred in 2010.

3.2.3.4 Annual Inventory Reconciliation of Nationally Tracked Sources

Under existing regulations, licensees are required to conduct inventories of their sealed sources. For example, well loggers must conduct an inventory under 10 CFR 39.37, brachytherapy users must conduct an inventory under 10 CFR 35.67, and radiographers must conduct an inventory under 10 CFR 34.29. 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 January each year. As part of the verification process, the licensee would be required to resolve any discrepancies between the NSTS 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.[9] 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 indicated in Section 3.2.2.1, the NRC estimates that 1000 licensees with Category 3 sources (2500 licensees with 1/10th of Category 3 sources) would reconcile and verify inventory information for nationally tracked sources. Thus, the labor cost to licensees is estimated to be $87,000 (i.e., 1000 licensees x $87/licensee) for licensees with Category 3 sources ($217,500 (i.e., 2500 licensees x $87/licensee) for licensees with 1/10th of Category 3 sources.

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

[8] 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).

[9] 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).

- *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 48 licensees with Category 3 sources (119 licensees with 1/10th of Category 3 sources) submitting information by fax would incur a materials cost of $0.15 for faxing the information to the NSTS.[10] Thus, the materials cost to licensees submitting information by fax is estimated to be $7 for licensees with Category 3 sources (i.e., 48 licensees x $0.15/licensee) and $18 for licensees with 1/10th of Category 3 sources (i.e., 119 licensees x $0.15/licensee).

- *Mail.* The NRC estimates that each of the 48 licensees with Category 3 sources (119 licensees with 1/10th of Category 3 sources) submitting information by mail would incur a materials cost of $3.64 for mailing the information to the NSTS.[11] Thus, the materials cost to licensees submitting information by mail is estimated to be $173 for licensees with Category 3 sources (i.e., 48 licensees x $3.64/licensee) and $432 for licensees with 1/10th of Category 3 sources (i.e., 119 licensees x $3.64/licensee).

- *Telephone with Follow-up by Fax or Mail.* This cost is negligibly small and not included in the total costs.

Based on the above, the materials cost to licensees is estimated to be $180 for licensees with Category 3 sources and $450 for licensees with 1/10th of Category 3 sources

In summary, the NRC estimates that industry's total annual labor and materials cost for reconciling and verifying its inventory of nationally tracked sources would be $87,180 for licensees with Category 3 sources ($217,950 for licensees with 1/10th of Category 3 sources). For purposes of this analysis, the NRC assumes that this annual industry operating cost would be incurred for the first time in 2010.

3.2.3.5 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:

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

[11] 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).

- *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 with Category 3 sources would complete and submit 6078 reports on-line (licensees with 1/10th of Category 3 sources would complete/submit 7591 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 $88,131 for licensees with Category 3 sources (i.e., 6078 reports x $14.50/report) ($110,069 for licensees with 1/10th of Category 3 sources (i.e., 7591 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 Tables 3 and 4, the NRC estimates that, each year, licensees with Category 3 sources would complete and submit 473 reports (licensees with 1/10th of Category 3 sources would complete/submit 444 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 $3429 for licensees with Category 3 sources (i.e., 473 reports x $7.25/report) ($3219 for licensees with 1/10th of Category 3 sources (i.e., 444 reports x $7.25/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 NSTS.[14] Thus, the total cost for completing and submitting a report is estimated to be $21.90 (i.e., $21.75 + $0.15).

[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.

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

The NRC further estimates that, each year, licensees with Category 3 sources would complete and submit 82 reports by fax (licensees with 1/10th of Category 3 sources would complete/submit 156 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 $1796 for licensees with Category 3 sources (i.e., 82 reports x $21.90/report) ($3416 for licensees with 1/10th of Category 3 sources (i.e., 156 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 with Category 3 sources would complete and submit 82 reports by mail (licensees with 1/10th of Category 3 sources would complete/submit 156 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 $2082 for licensees with Category 3 sources (i.e., 82 reports x $25.39/report) ($3960 for licensees with 1/10th of Category 3 sources (i.e., 156 reports x $25.39/report)).

3.2.3.6 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).[16] As shown in Tables 3 and 4, the NRC estimates that, each year, licensees with Category 3 sources would submit 6725 National Source Tracking Transaction Reports (licensees with 1/10th of Category 3 sources would submit 8367 such reports). Based on best judgment, the NRC estimates that licensees would correct and re-submit one percent of these reports, (i.e., 6725 x 0.01 = 67 reports for Category 3 licensees)(i.e., 8367 x 0.01 = 84 reports for 1/10th Category 3 licensees). Thus, the industry's total annual cost for correcting and re-submitting previously filed National Source Tracking Transaction Reports is estimated to be $291 (i.e., 67 reports x $4.35/report)($365.00 for licensees with 1/10th Category 3 sources [i.e., 84 reports x $4.35/report]).

[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] 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.

Note that, for purposes of this analysis, the NRC assumes that this annual industry operating cost would be incurred for the first time in 2009.

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.[17] 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). In Tables 1 and 2, NRC estimates that 6233 Category 3 (11,677 of 1/10th of Category 3) nationally tracked sources are manufactured each year. Thus, the industry's total annual cost for assigning unique serial numbers to Category 3 nationally tracked sources is estimated to be $18,076 (i.e., 6233 sources x $2.90/source) ($33,863 for 1/10th of Category 3 sources [11,677 sources x $2.90/source]).

3.2.3.8 Inspection Costs

NRC and Agreement States would conduct inspections of the NSTS reporting requirements. These inspections would be included as part of routine inspections. NRC estimates between one half to one hour would be needed to conduct the inspection for NSTS requirements. Thus, the total effort would be $17,400 for NRC (i.e., $87 per hour x 1 hour per licensee x 200 NRC licensees) and $69,600 for Agreement States (i.e., $87 per hour x 1 hour per licensee x 800 Agreement State licensees) for 2010. In later years, the inspection effort would be based on reporting discrepancies; therefore, beginning in 2011, the cost would be $5,742 for NRC and $22,970 for Agreement States for Category 3 licensees ($14,355 and $57,420, respectively for 1/10th of Category 3 licensees)

3.2.3.9 Agreement State Costs

Agreement States would need to issue legally binding requirements to their licensees to require the licensees to report to the expanded NSTS. This could be done through promulgating a comparable rule, issuing orders, or adding and revising individual license conditions. It may involve more than one activity. The proposed rule is Compatibility Category "B"; therefore, an Agreement State should adopt program elements essentially identical to those of NRC. The NRC program elements in this category are those that apply to activities that have direct and significant transboundary implications. The expanded NSTS is a national system and everyone must begin reporting at the same time and using the same requirements for the system to be

[17] The existing NSTS rule requires such serialization; the proposed rule would expand the requirement to

IAEA Category 3 sources (or 1/10th of IAEA Category 3 sources).

useful. Since each of the 34 Agreement States may choose different implementation mechanisms and have different numbers of licensees, it is difficult to estimate the costs for each Agreement State. Since legally binding requirements need to be essentially word-for-word compatible, the process should be relatively simple, especially as a follow-on to the establishment of the NSTS for Category 1 and 2 sources. NRC estimates that on the average, each Agreement State would expend 0.15 FTE at $76,000/FTE for each State. At this time, there are 34 Agreement States; therefore, the total cost for all Agreement States would be approximately $384,000.

3.2.3.10 Costs of Annual Inventory Only for the Approach of Only Requiring Licensees to Follow Inventory Requirements of the NSTS

As noted in Section 2.2, each Sub-option considered in this Regulatory Analysis includes an approach of only requiring licensees to follow the inventory requirements of the NSTS. Under this approach licensees would not track transactions or file transaction reports. They would also not perform annual reconciliations of their inventory with the transaction reports. However, they would still conduct, and report on, the initial inventory and an annual inventory. It is assumed for the purposes of estimating costs in this Regulatory Analysis that the costs of the annual inventory would be similar to the costs of the initial inventory.

Thus, the NRC estimates that under the requirements of an inventory-only expansion of the NSTS, industry's annual cost would include conducting and reporting the inventory of nationally tracked sources; account set-up and training in use of the NSTS; and assigning of serial numbers. In addition, there would also be costs of NRC credentialing of users, inspection costs, although reduced; NRC monitoring costs, although substantially reduced; and Agreement State implementation costs. For purposes of this analysis, the NRC assumes that this *annual* industry operating cost would be incurred for the first time in 2010.

3.3 Results

As discussed in Section 2.2, the NRC considered Options 2a, 2b, and 2c in this Regulatory Analysis. As noted in Section 3.2.2.1, the One-time Data Collection is not collecting data on lower than 1/10th of Category 3 sources (i.e., Category 4 or 5) and, therefore, quantitative analysis of Option 2c (Expanding the NSTS to IAEA Category 4) was not undertaken as part of this analysis. Expansion of the NSTS to include all of Category 4 sources (and/or Category 5) was considered. However in both cases it was decided that, because of the magnitude of the thresholds of each of these categories and the lower likelihood that sources at the lower range of Category 4 or in Category 5 could be aggregated to the higher category levels, it would not be reasonable to incur the additional Option 2c burden of including these sources in the NSTS.

Under the NSTS alternative for each of the two sub-options that can be quantified (Sub-options 2a and 2b), the NRC would require licensees with sources at or above the Category 3 threshold and/or at or above 1/10th of the Category 3 threshold to report information as follows:

Sub-Option 2a: Expand National Source Tracking System to IAEA Category 3

(1) require these additional licensees to follow the same requirements as in the existing NSTS, including: making and reporting initial and annual inventories; tracking transaction reports; and assigning serial numbers to sources; and

(2) require the additional licensees possessing these sources to only follow the inventory requirements of the NSTS.

Sub-Option 2b: Expand National Source Tracking System to 1/10th of IAEA Category 3

(1) require these additional licensees to follow the same requirements as in the existing NSTS, including: making and reporting initial and annual inventories; tracking transaction reports; and assigning serial numbers to sources; and
(2) require the additional licensees possessing these sources to only follow the inventory requirements of the NSTS.

In estimating the costs for following the inventory requirements of the NSTS, it is assumed that licensees would be required to:

- set up an account with the NSTS and conduct necessary training;
- conduct and report an initial inventory;
- conduct and report an annual inventory;
- for manufacturers, mark a unique serial number on the source.

As can be seen in Sections 3.2.3.1 through 3.2.3.10 of this document, NRC staff used the cost assumptions in Section 3.2 to estimate one-time and annual incremental costs to industry and the NRC under Options 2a and 2b. As noted in Section 3.2.3, all one-time and annual costs were calculated in 2005 dollars to facilitate comparison with the Regulatory Analysis for the NSTS for Category 1 and 2 sources. These one-time and annual costs were then estimated over a three-year period, in a manner similar to that done for the OMB burden analysis, using discount rates of 7 and 3 percent. These results are presented in Tables 5 through 8 located at the end of this analysis.

NRC staff believes that expected qualitative values contribute substantially to the benefits of the NSTS. These qualitative values include:

- *Improved Control of These Additional Nationally Tracked Sources.* The expanded NSTS is expected to result in improved accountability of nationally tracked sources and provide additional protection against aggregation of lower activity sources. This is expected to improve public health (accident/event) and avert potential offsite property damage and costs.

- *Improved Regulatory Efficiency.* The expansion of the NSTS to monitor the location of Category 3 (or lower) nationally tracked sources would improve regulatory efficiency by increasing accountability among all parties associated with a nationally tracked source transaction.

- *Increased Public Confidence.* Information contained in the expanded NSTS 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.

- *Enhanced NRC's Ability to Protect Public Health and Safety.* Information contained in the expanded NSTS would allow the NRC to better monitor the location of nationally tracked sources and, thus, improve accountability of them. Consequently, the NSTS should enhance NRC's ability to protect the public health and safety.

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 regulatory alternatives identified, the values and impacts have been considered. Option 2b (expanding the NSTS to 1/10th of Category 3 sources) was determined to be the preferred option because it is expected to: (1) improved accountability and control of nationally tracked sources and thereby enhance NRC's ability to protect public health and safety; (2) improve regulatory efficiency (by increasing accountability among all parties associated with a nationally tracked source transaction); and (3) increase public confidence. NRC believes that the incremental costs to licensees and the NRC under Option 2b are justified based on these considerations and because the Energy Policy Act of 2005 requires NRC to issue regulations for a source tracking system.

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 April 2009. No impediments to implementation of the recommended alternative have been identified.

The proposed regulatory action would require licensees who manufacture, transfer, receive, disassemble, or dispose of a nationally tracked source to: (1) report their initial inventory of nationally tracked sources greater than or equal to 1/10th of the IAEA Category 3 threshold to the NSTS; (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 NSTS 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 expanding the NSTS and expects to finalize its development by January 2009. When completely operational, the expanded NSTS would be a web-based system that would allow licensees to meet the proposed reporting requirements.

Table 5

Regulatory Analysis for Extending NSTS to IAEA Category 3 Sources

Category	3% Discount Rate					7% Discount Rate			
	Industry	NRC	AS	Total		Industry	NRC	AS	Total
Inventory Requirements	210,496	0	0	210,496		201,303	0	0	201,303
Transaction Reports	182,686	0	0	182,686		172,618	0	0	172,618
Manufacturers' Costs	34,587	0	0	34,587		32,681	0	0	32,681
Licensee Account Set-up	826,500	0	0	826,500		826,500	0	0	826,500
Implementation By Regulators	0	600,000	387,600	987,600		0	600,000	387,600	987,600
Operations by Regulators	0	3,873,059	184,480	4,057,540		0	3,661,533	42,785	3,704,318
Total	1,254,269	4,473,059	572,080	6,299,409		1,233,102	4,261,533	430,385	5,925,020

Table 6

Regulatory Analysis for Extending NSTS to 1/10th of IAEA Category 3 Sources

Category	3% Discount Rate					7% Discount Rate			
	Industry	NRC	AS	Total		Industry	NRC	AS	Total
Inventory Requirements	526,241	0	0	526,241		503,258	0	0	503,258
Transaction Reports	226,113	0	0	226,113		213,652	0	0	213,652
Manufacturers' Costs	64,796	0	0	64,796		61,225	0	0	61,225
Licensee Account Set-up	1,935,750	0	0	1,935,750		1,935,750	0	0	1,935,750
Implementation By Regulators	0	1,500,000	387,000	1,887,600		0	1,500,000	387,600	1,887,600
Operations by Regulators	0	9,682,648	461,201	10,143,849		0	9,153,831	106,962	9,260,794
Total	2,752,900	11,182,648	848,201	14,784,349		2,713,885	10,653,831	494,562	13,862,279

Table 7

Regulatory Analysis for Extending NSTS to IAEA Category 3 Sources

Inventory Requirements Only

Category	3% Discount Rate					7% Discount Rate			
	Industry	NRC	AS	Total		Industry	NRC	AS	Total
Inventory Requirements	127,260	0	0	127,260		122,654	0	0	122,654
Transaction Reports	0	0	0	0		0	0	0	0
Manufacturers' Costs	34,587	0	0	34,587		32,681	0	0	32,681
Licensee Account Set-up	739,500	0	0	739,500		739,500	0	0	739,500
Implementation By Regulators	0	600,000	387,600	987,600		0	600,000	387,600	987,600
Operations by Regulators	0	405,754	92,240	497,994		0	384,352	21,392	405,744
Total	901,347	1,005,754	479,840	2,386,941		894,835	984,352	408,992	2,288,179

Table 8

Regulatory Analysis for Extending NSTS to 1/10th of IAEA Category 3 Sources

Inventory Requirements Only

Category	3% Discount Rate					7% Discount Rate			
	Industry	NRC	AS	Total		Industry	NRC	AS	Total
Inventory Requirements	318,151	0	0	318,151		306,636	0	0	306,636
Transaction Reports	0	0	0	0		0	0	0	0
Manufacturers' Costs	64,796	0	0	64,796		61,225	0	0	61,225
Licensee Account Set-up	1,848,750	0	0	1,848,750		1,848,750	0	0	1,848,750
Implementation by Regulators	0	1,500,000	387,000	1,887,600		0	1,500,000	387,600	1,887,600
Operations by Regulators	0	1,014,385	230,600	1,244,985		0	960,879	53,481	1,014,361
Total	2,231,697	2,514,385	617,600	5,364,282		2,216,611	2,460,879	441,081	5,118,572