

Chapter 2

Program Performance



Photo Courtesy of NRC Photo Library

Turkey Point nuclear power plant is located on Biscayne Bay, south of Miami, FL, and just east of the Homestead area. It is run by Florida Power & Light Company.



Photo Courtesy of NRC Photo Library

Senior Construction Inspector Rashean Jackson reviews drawings during a problem identification and resolution inspection at the Louisiana Energy Services National Enrichment Facility (LES NEF). The LES NEF is gas centrifuge uranium enrichment facility that is currently under construction.

Measuring and Reporting Performance

This chapter presents information on the U.S. Nuclear Regulatory Commission's (NRC's) performance in achieving its mission during fiscal year (FY) 2009. The agency's mission is to license and regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

This chapter describes the NRC's performance results and program achievements in accomplishing its two strategic goals of safety and security. The safety goal discussion addresses the NRC's key regulatory oversight for operating reactor licensing, new reactor licensing, reactor inspection, fuel facilities, nuclear material users, high-level waste repository, decommissioning and low-level waste, and spent fuel storage and transportation. The security goal discussion addresses security activities in the nuclear reactor safety and nuclear materials and waste safety programs. In addition, this chapter describes the agency's progress in achieving its Organizational Excellence Objectives of openness, effectiveness, and operational excellence. Lastly, it describes information on data sources, data quality, and the completeness and reliability of performance data. The discussion focuses primarily on the NRC's methods for collecting and analyzing data, ensuring data security, and improving the agency's performance measures and the quality of its data during the current reporting period.

Goals and Performance Measures

STRATEGIC GOAL 1: SAFETY

Ensure Adequate Protection of Public Health and Safety and the Environment

Strategic Outcomes

The NRC uses the following five strategic outcomes associated with the safety goal that determine whether the agency has achieved its objective to ensure adequate protection of public health and safety and the environment:

- Prevent the occurrence of any nuclear reactor accidents.
- Prevent the occurrence of any inadvertent criticality events.
- Prevent the occurrence of any acute radiation exposures resulting in fatalities.
- Prevent the occurrence of any releases of radioactive materials that result in significant radiation exposures.
- Prevent the occurrence of any releases of radioactive materials that cause significant adverse environmental impacts.

RESULTS: In FY 2009, the NRC achieved all of its safety goal strategic outcomes.

Performance Measures

Table 1 lists the agency's annual performance measures and their outcomes for the past 6 years. The performance measures quantify the agency's success in achieving its safety goal.

Table 1

FISCAL YEAR 2009 SAFETY GOAL PERFORMANCE MEASURES

Measure	2004	2005	2006	2007	2008	2009
1. Number of new conditions evaluated as red by the Reactor Oversight Process is ≤ 3 .	1	0	0	0	0	0
2. Number of significant accident sequence precursors of a nuclear reactor accident is 0.	0	0	0	0	0	0
3. Number of operating reactors with integrated performance that entered the Manual Chapter 0350 process, or the multiple/repetitive degraded cornerstone column, or the unacceptable performance column of the Reactor Oversight Program action matrix, with no performance exceeding Abnormal Occurrence Criterion I.D.4 is ≤ 4 .	1	0	0	1	0	0
4. Number of significant adverse trends in industry safety performance with no trend exceeding the Abnormal Occurrence Criterion I.D.4 is ≤ 1 .	0	0	0	0	0	0
5. Number of events with radiation exposures to the public and occupational workers that exceed Abnormal Occurrence Criterion I.A is						
Reactors: 0	0	0	0	0	0	0
Materials: ≤ 3	0	1	0	0	0	0
Waste: 0	0	0	0	0	0	0
6. Number of radiological releases to the environment that exceed applicable regulatory limits is						
Reactor: ≤ 3	0	0	0	0	0	0
Materials: ≤ 2	1	0	0	0	0	0
Waste: 0	0	0	0	0	0	0

Analysis of FY 2009 Results

1. Reactor Oversight Process: The NRC reactor inspection program monitors nuclear power plant performance in three broad areas—reactor safety, radiation safety, and security and protection of the environment. Plant performance is analyzed based on many performance indicators and inspection findings. Each finding is then categorized into one of four categories—green, white, yellow, or red. Red findings indicate a finding of high safety significance. There were no red performance indicators or findings in FY 2009.

2. Reactor significant precursors: The second measure tracks significant precursor events. This statistical measure of risk determines the likelihood of an event impacting safety adversely. A significant precursor is an event that has a probability of 1 in 1,000 (or greater) of leading to substantial damage to the reactor fuel. No significant precursor events have been identified based on screening reviews.

3. Reactor performance: The conditions in this measure indicate whether the NRC finds significant performance issues in a plant during an inspection or from performance indicators under the Reactor

Oversight Program. If any of the conditions in this measure are met, the NRC will take action to ensure that plant safety is improved. There were no reactors that met the conditions in this measure.

4. **Reactor safety trends:** This measure tracks trends for several key indicators of industry safety performance. These indicators provide insights into major areas of reactor performance, including reactor safety, radiation safety, and emergency preparedness. The NRC applies statistical analysis techniques to each indicator to calculate long-term trends. These trends represent industry averages rather than individual plant performance. No statistically significant adverse trends have been identified in any of the indicators in FY 2009.
5. **Nuclear material radiation exposures:** This measure tracks the number of radiation exposures to the public and occupational workers that exceed Abnormal Occurrence Criterion I.A.3, which is defined as those events that produce unintended permanent functional damage to an organ or a physiological system, as determined by a physician. This measure tracks both nuclear reactors and other nuclear material users, such as hospitals and industrial users. No radiation exposures exceeding Abnormal Occurrence Criterion I.A.3 occurred in FY 2009.
6. **Nuclear material releases to the environment:** This measure indicates the effectiveness of the NRC's nuclear material environmental regulatory programs. Exceeding the applicable regulatory limits is defined as a total effective radiation dose equivalent to individual members of the public that is attributable to a licensed user of nuclear materials but does not exceed 0.1 rem in a year, exclusive of dose contributions from background radiation. No nuclear material releases to the environment that exceeded regulatory limits occurred in FY 2009.

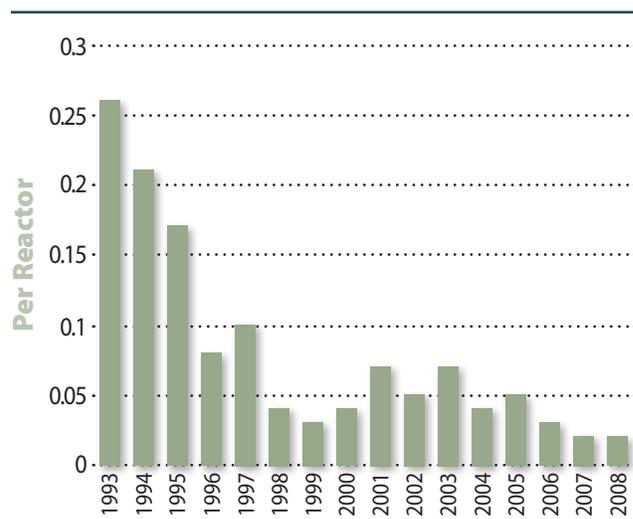
The Industry Trends Program

The NRC measures the effectiveness of its nuclear reactor safety program activities based on the continued safe operation of the Nation's nuclear power

plants. The NRC compiles data on overall safety performance using several industry-level performance indicators, a number of which are addressed in the following pages. These indicators show significant improvement in the long-term safety performance of nuclear power plants since 1993. Plant operating experience data have yielded a steady stream of improvements in the reliability of plant systems and components, plant operating procedures, training of power plant operators, and regulatory oversight. For ease of viewing, all the charts in this section display data since 1993.

The industry safety indicators are derived through engineering and scientific analyses by the NRC's Office of Nuclear Reactor Regulation and Office of Nuclear Regulatory Research. Since the final data are not available until February of each year, this report will only show final fiscal year data from FY 1993–2008. The results of these analyses are provided to the NRC Commission (SECY-09-0048) and reported annually to Congress.

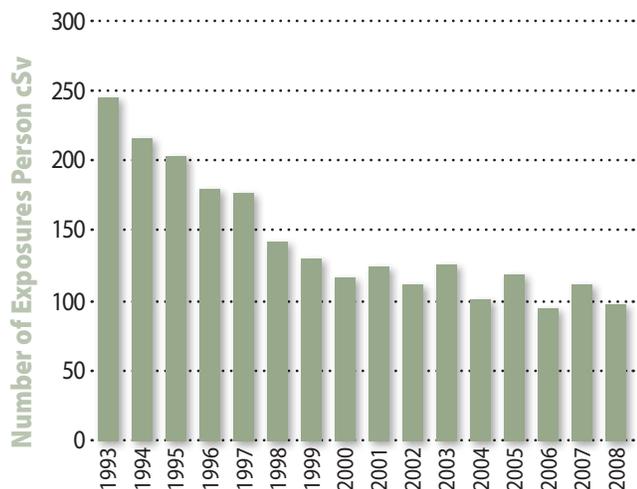
Figure 10
SIGNIFICANT EVENTS



Significant events meet specific criteria such as degradation of important safety equipment. The agency reviews operating events and assesses their safety significance. The number of significant events has declined since 1993.

Figure 11

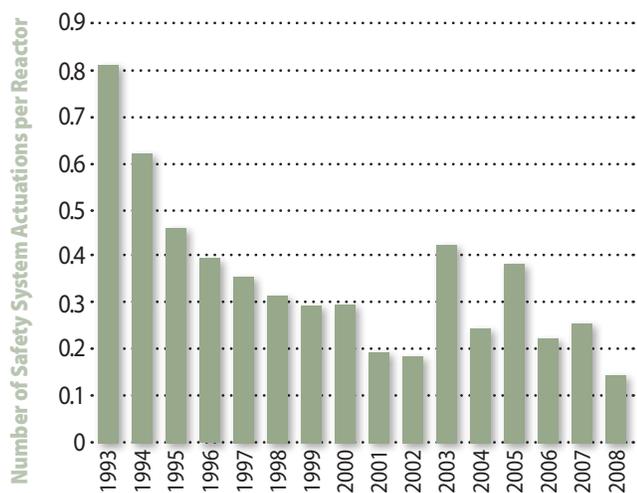
RADIATION EXPOSURE



The total (collective) radiation dose received by workers is an indication of the radiological challenges of maintaining and operating nuclear power plants. The trend shows a reduction in collective dose since 1993 and demonstrates the effectiveness of the controls on radiation exposure implemented to meet these challenges.

Figure 13

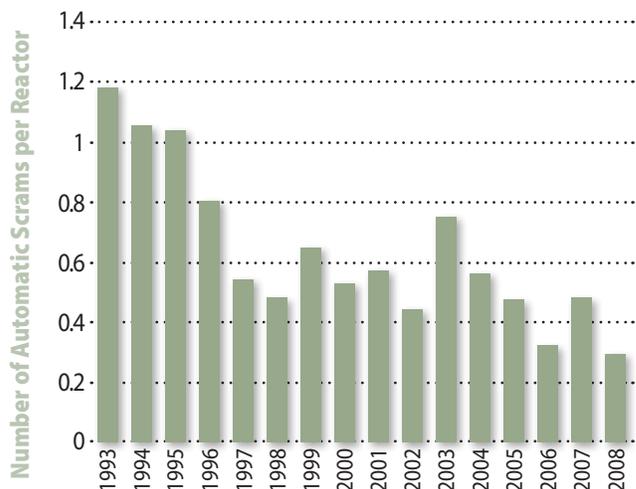
SAFETY SYSTEM ACTUATIONS



Safety systems mitigate off-normal events, such as the widespread power blackout in August 2003, by providing reactor core cooling and water addition. Actuations of safety systems that are monitored include certain emergency core cooling and emergency electrical power systems. Actuations can occur as a result of false alarms (such as testing errors) or in response to actual events.

Figure 12

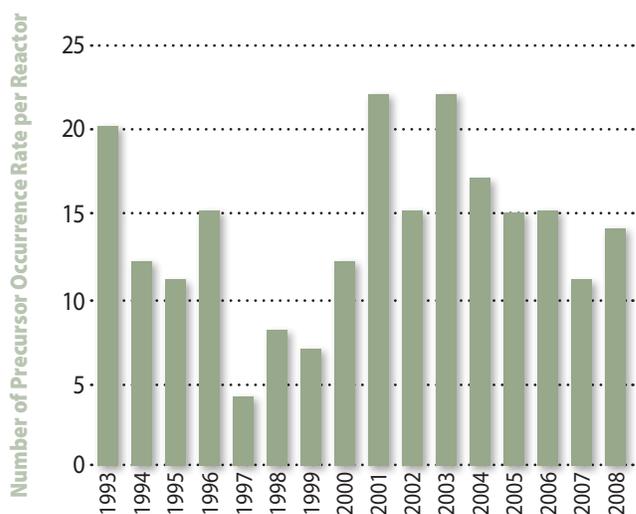
AUTOMATIC SCRAMS



A scram is a basic reactor protection safety function that shuts down the reactor by inserting control rods into the reactor core. Scrams can result from events that range from relatively minor incidents to precursors of accidents. The massive power blackout in August 2003, accounts for most of the increase in FY 2003, but has not affected the statistical trend for number of scrams, which has been declining steadily since 1993.

Figure 14

PRECURSOR OCCURRENCE RATE

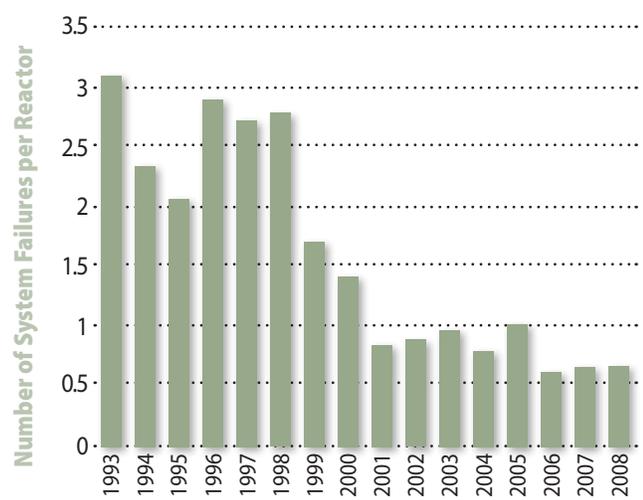


A precursor event is an event that has a probability of greater than 1 in 1 million of leading to substantial damage to the reactor fuel. The observed increase in precursors starting in FY 2001 is due to the increase

in Accident Sequence Precursor (ASP) Program scope (e.g., inclusion of external events and significance determination process findings) beginning in FY 2000. These increases in scope have resulted in the identification of an increasing number of lower-risk precursors (i.e., CCDP or Δ CDP $< 10^{-4}$). In addition, an increased number of outlier events (e.g., the 8 events leading to loss of offsite power due to the 2003 Northeast Blackout and the 11 events involving control-rod drive mechanism housing cracks between FY 2001 and FY 2003) account for the observed change. During the FY 2001 through FY 2008 period, the overall occurrence rate is statistically decreasing during the 8 year period. Due to the complexities associated with evaluating precursor events, the data always lag behind other indicators.

Figure 15

SAFETY SYSTEMS FAILURES



Safety system failures include any events or conditions that could prevent a safety system from fulfilling its safety function. The number of safety system failures across the industry has declined since 1993.

Nuclear Reactor Licensing Activity

The agency's nuclear reactor licensing activity ensures that licensees operate civilian nuclear power reactors and test and research reactors in a manner that adequately protects public health and safety and the environment while safeguarding special nuclear

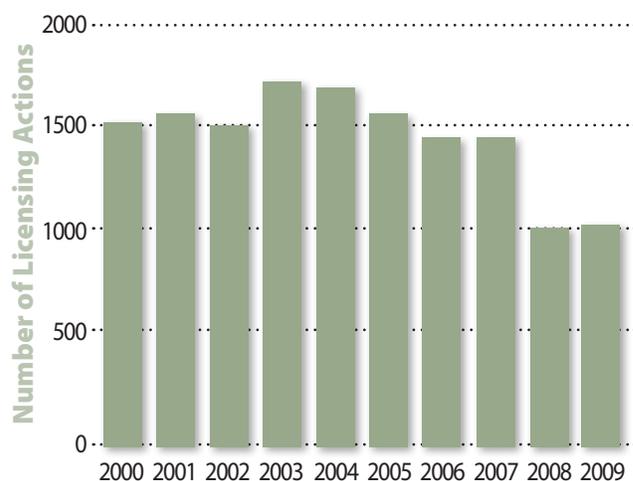
materials used in reactors. Safety at nuclear power plants has improved substantially over the past 20 years, as both the nuclear industry and the NRC have been proactive in identifying and correcting problems to improve the operation and maintenance of nuclear power facilities. The combined efforts of the nuclear industry and the NRC led to this improvement in the safety performance of nuclear power plants. For more information on reactor licensing, see <http://www.nrc.gov/reactors/operator-licensing.html>.

Licensing Actions

The NRC completed 1,002 reactor licensing actions in FY 2009. The agency has experienced a significant decrease in the number of licensing actions completed in the past 4 years (see Figure 16). This is predominately due to the fact that the agency received only 900 such actions in FY 2009, compared with an average of 1,250 submittals per year since 2003.

Figure 16

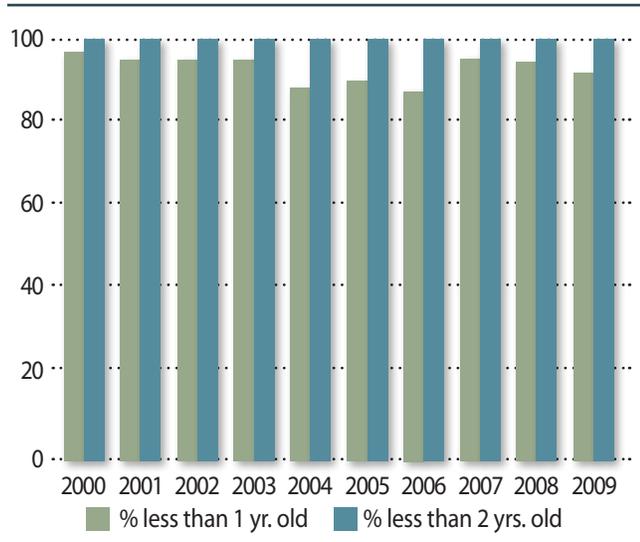
LICENSING ACTIONS



The NRC continues to complete licensing actions in a timely manner. The staff completed 94 percent of the licensing actions in the agency's inventory within 1 year of receipt and 100 percent within 2 years (see Figure 17).

Figure 17

LICENSING ACTION AGE



Power Uprates

The NRC also evaluates nuclear reactor power uprate applications, which allow licensees to increase the power output of their plants. The NRC review focuses on the potential impacts of the proposed power uprate on overall plant safety and evaluates whether plant operation at the increased power level is safe. The cumulative additional power from all power uprates approved since 1977 is about 5,640 megawatts electric. The NRC currently has 11 power uprates under review. If approved, these uprates will add approximately 973 megawatts electric to the grid. The NRC expects to receive 40 new power uprate applications in the next 5 years. If approved, these uprates will add about 2,076 megawatts electric to the grid.

During FY 2009, the NRC undertook several rulemaking activities to improve protection of public health and safety and the environment and improve the regulatory framework. One rulemaking was the publication of a proposed rule to enhance NRC regulations for emergency preparedness. The agency also published a final rule on alternate fracture toughness requirements for protection against pressurized thermal shock events in reactor vessels using updated analysis methods, and a proposed rule that updates NRC requirements for the generic environmental impact statement (GEIS) addressing

the environmental effects of renewing power reactor operating licenses.

New Reactor Licensing

The NRC revised Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” to require applicants for new nuclear power reactors to perform a design-specific assessment of the effects of the impact of a large, commercial aircraft. The rule requires applicants to use realistic analyses to identify and incorporate design features and functional capabilities to ensure, with reduced use of operator actions, that either the reactor core remains cooled or the containment remains intact and either spent fuel cooling or spent fuel pool integrity is maintained. In addition, the NRC issued interim staff guidance documents titled “Necessary Content of Plant Specific Technical Specifications” and “Generic Communication Plan for the Review of Combined License Applications.” The communication plan outlines the internal and external communications required for various phases of the review, up to and including issuance of a license. Its purpose is to deliver clear and concise messages about new reactor requirements, as well as to convey the NRC’s expectations and objectives to key internal and external stakeholders and other interested parties in a timely and efficient manner. For more information on new reactors, see <http://www.nrc.gov/reactors/new-reactors.html>.

New Reactor Designs

The NRC is actively reviewing several nuclear reactor designs, and plans to conclude these reviews with a design certification rulemaking. When an application references a certified design, the license application review can proceed that promotes safety and minimizes delays.

The NRC is currently performing the design certification review of the General Electric Economic Simplified Boiling-Water Reactor (ESBWR) design, the AREVA Evolutionary Power Reactor (EPR), and the Mitsubishi U.S. Advanced Pressurized-Water Reactor (USAPWR). The agency is also in the process of performing design certification amendment reviews

for the Westinghouse AP1000 design and the General Electric Advanced Boiling Water Reactor (ABWR). In addition, vendors for four small reactors have requested preapplication discussions with the NRC. In FY 2009, the NRC has held public preapplication meetings with these vendors to help the NRC staff understand the designs of the various reactors.

In FY 2009, the staff issued an information paper describing plans to streamline the design certification rulemaking process. The staff evaluated this process as part of the NRC's Lean Six Sigma program in order to identify possible ways to shorten the rulemaking process and coordinate activities (design reviews, rulemaking, and licensing) to minimize the effect of the rulemaking on combined license (COL) schedules. As a result, the agency will improve the rulemaking process by adopting several internal enhancements that are expected to decrease the rulemaking review time by up to several months.

Early Site Permits

By issuing an early site permit, the NRC approves the site for a nuclear facility. Early site permits are valid for 10 to 20 years and can be renewed for an additional 10 to 20 years. The NRC review of an early site permit application addresses site safety issues, environmental protection issues, and plans for coping with emergencies, independent of the review of a specific nuclear plant design. The NRC issued early site permits to the Clinton site in Illinois on March 15, 2007; the Grand

Gulf site in Mississippi on April 5, 2007; the North Anna site in Virginia on November 27, 2007; and the Vogtle site in Georgia on August 26, 2009.

Combined License

The goals for new reactors are to review COL applications, first to ensure the proposed new reactor design and planned operations will be in accordance with NRC regulations for safety, security, and the environment and second that the reviews will be completed on the schedules negotiated with applicants. For FY 2009, the NRC established a target to complete milestones associated with conducting 20 COL application reviews. To date, the NRC has docketed 18 COL applications from the nuclear power industry for sites across the country. Thirteen of the 18 applications are being actively reviewed. The NRC is developing the review schedule for the Turkey Point COL. In response to applicant requests, the NRC has suspended the reviews of the Grand Gulf, Victoria County, Callaway, Nine Mile Point, and River Bend COL applications.

In FY 2009, 9 COL applications were submitted to the NRC. The NRC developed a new set of goals to sequence project reviews, emphasizing those projects that are expected to complete licensing and construction and begin operation in the near term (potentially resulting in commercial operation in 2016–2017).

COMBINED LICENSE APPLICATIONS RECEIVED IN FY 2009

Site Name (Units)	State	Company	Accepted
Levy County (2 units)	FL	Progress Energy	10/06/2008
Victoria County (2 units)	TX	Exelon	10/30/2008
Fermi (1 unit)	MI	Detroit Edison	11/25/2008
Comanche Peak (2 units)	TX	Luminant Power	12/02/2008
River Bend (1 unit)	LA	Entergy	12/04/2008
Callaway (1 unit)	MO	AmerenUE	12/12/2008
Nine Mile Point (1 unit)	NY	UNISTAR	12/12/2008
Bell Bend (1 unit)	PA	PPL Generation	12/19/2008
Turkey Point (2 units)	FL	Florida Power & Light	9/02/2009

The NRC has developed a construction inspection program for plants to be licensed under 10 CFR Part 52, and undertook many critical development activities for this program in FY 2009. For example, the NRC produced a number of draft and final construction inspection program materials, such as inspection procedures, inspection strategy documents, regulatory guides, inspection manual chapters, and a construction inspection program information brochure for stakeholders in both English and Spanish. The staff developed an approach for maintaining completed inspections, tests, analyses, and acceptance criteria (ITAAC), and continued developing a detailed ITAAC closure verification process. NRC staff (1) continued inspector development and training, (2) deployed the initial version of the Construction Inspection Program Information Management System, which will capture inspection results and track ITAAC closure, (3) developed business processes to support additional identified information technology system needs, (4) continued development of generic inspection schedules, (5) continued development of enhancements to the existing assessment and enforcement program for new reactors, and (6) maintained an aggressive schedule of public meetings to provide a forum for stakeholders to participate and comment on staff proposals for ITAAC closure, licensee assessment, enforcement, and other construction inspection program topics.

The agency has in place a regular schedule of vendor inspections and an active program of international cooperation to support increased fabrication activities domestically and internationally in response to new reactor construction plans. The NRC conducts these inspections to ensure the effective implementation of quality assurance program requirements imposed on vendors by NRC applicants and licensees. The NRC conducts a minimum of 10 domestic and international routine and reactive vendor inspections per year. In FY 2009, 10 inspections were completed. The NRC held a highly successful “Workshop on Vendor Oversight for New Reactor Construction” with more than 600 participants from all program stakeholder groups. Related international cooperative efforts have included multinational vendor inspections, technical

discussions with foreign regulatory counterparts, vendor experience and information sharing with other countries, NRC inspector rotations to facilities under construction in other countries, and participation in the Vendor Inspection Cooperation Working Group under the auspices of the Multinational Design Evaluation Program. Exchanges such as these have provided key insights into each country’s methods of oversight and have enabled the NRC to build a foundation of trust and a rapport for communicating and sharing key information, findings, and enhancements to its own programs.

Advanced Reactor Program

The NRC has continued its efforts to support programs sponsored by the U.S. Department of Energy (DOE) such as the Generation IV Nuclear Energy Systems initiative, which is focused on research and development for a very-high-temperature reactor. Specifically, the NRC has concentrated on identifying and resolving generic policy issues as well as key technical issues for the licensing of a variety of advanced reactor designs. In addition, the agency continues to conduct preapplication interactions with private companies that are proposing small and medium-sized reactors for electrical and process heat applications.

License Renewal

The NRC grants nuclear reactor operating licenses for 40 years, which can be renewed for an additional 20 years. The review process for renewal applications is designed to assess whether a reactor can continue to operate safely during the extended period of operation.

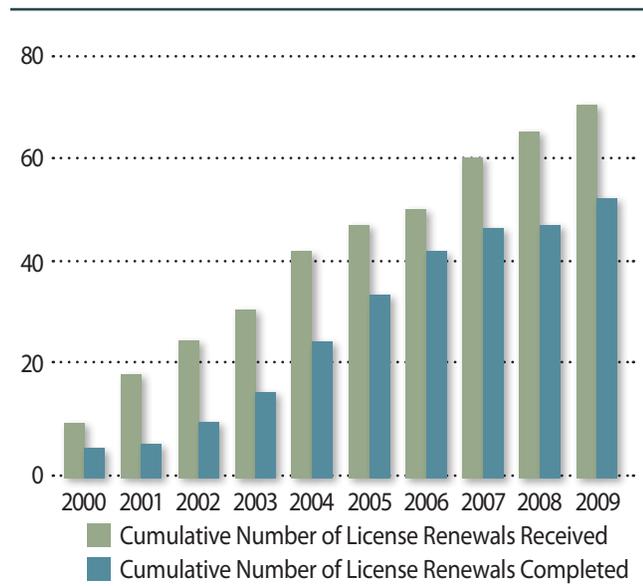
To renew a license, the utility must demonstrate that the effects of aging will not adversely affect structures or components important to safety during the renewal period. Such structures and components include the reactor vessel, piping, electrical cabling, containment structure, and steam generators. For some structures or components, additional action may be needed to ensure adequate margins of safety. Additionally, the agency assesses the potential impacts of the extended period of operation on the environment.

The NRC has received applications to renew the licenses for 72 units at 43 sites since the license renewal program began in 2000 and has renewed licenses for 54 units at 31 sites during that time (see Figure 18). The NRC is currently reviewing applications to renew the licenses for 18 units at 12 sites. The agency expects that almost all of the licensees for currently licensed units will ultimately apply to renew their licenses.

In FY 2009, NRC achieved its goal of completing four application reviews, a major milestone under the license renewal program.

Figure 18

LICENSE RENEWAL APPLICATIONS



Nuclear Reactor Inspection

The NRC's Reactor Oversight Process (ROP) outlines the agency's actions to verify that nuclear plants are being operated safely and in accordance with the NRC's rules and regulations. The NRC has full authority to demand that a licensee take immediate action for any conditions that result in excess risk to the public, including requiring a plant to shut down if necessary. The agency evaluates inspection findings and performance indicators to assess the safety performance of each operating nuclear power plant. The NRC performs a rigorous program of inspections at each plant and may perform supplemental

inspections and take additional actions to ensure that the plants address significant safety issues. The results of NRC inspection findings for each plant are available to the public at http://www.nrc.gov/nrr/oversight/assess/pim_summary.html. The NRC also conducts public meetings with licensees to discuss the results of the NRC's assessments of their safety performance.

In FY 2009, all of the Nation's nuclear power plants were operated in accordance with NRC safety and security requirements. In FY 2009, the safety indicators for nuclear plants as a whole showed no adverse trends and more than 99 percent of plant safety indicators were rated green, which is the highest safety rating.

The NRC continued to improve the ROP in FY 2009. Agency assessments confirm that the ROP has resulted in a more objective, risk-informed, and predictable regulatory process that focuses NRC and licensee resources on aspects of plant performance that have the greatest impact on safe plant operations. For more information on reactor inspection, see <http://www.nrc.gov/reactors/operating.html>.

Reactor Investigations and Enforcement

Compliance with NRC requirements plays an important role in giving the agency confidence that the licensee is maintaining safety. NRC policies deter noncompliance and encourage prompt identification and timely, comprehensive of safety corrective actions. Licensees, contractors, and their employees who do not achieve the high standard of compliance expected by the NRC are subject to enforcement sanctions. Each enforcement action depends on the circumstances of the case. The NRC will not permit licensees to continue to conduct licensed activities if they cannot achieve and maintain adequate levels of safety. In FY 2009, the agency took 30 escalated enforcement actions related to nuclear reactors and assessed \$65,000 in fines. Allegations of reactor-related wrongdoing are referred to the Office of Investigations for appropriate action.

Fuel Facilities

The NRC licenses and inspects all commercial nuclear fuel facilities that process and fabricate uranium ore into reactor fuel. This fuel is the manufactured material that powers the Nation's nuclear reactors.

Licensing and inspection activities include detailed health, safety, safeguards, and environmental licensing reviews, as well as inspections of licensee programs, procedures, operations, and facilities to ensure safe and secure operations.

The NRC conducted several significant fuel cycle licensing reviews in FY 2009. The agency completed transfers of ownership to Babcock & Wilcox Nuclear Operations Group from BWX Technologies and from Nuclear Fuel Services. During FY 2009, the NRC issued 40-year license renewals to the AREVA Richland and Global Nuclear Fuels Americas fuel fabrication facilities. These were the first 40-year renewals approved by the agency under a policy established by the Commission in 2006. The basis for the extended renewals relies on the licensee's integrated safety analysis. The integrated safety analysis describes the management measures to ensure that the selected controls are available and reliable. The analysis allows a licensee to use risk information to identify hazards and to develop the engineered and human performance barriers relied on to control and mitigate hazards.

The NRC also completed its Report to Congress and issued renewed Certificates of Compliance for the United States Enrichment Corporation (USEC) gaseous diffusion plants located near Paducah, KY, and Piketon, OH. Gaseous diffusion is a technology used to produce enriched uranium by forcing gaseous uranium hexafluoride through special membranes. By using a large cascade of many stages, high separations can be achieved. Gaseous diffusion was the first economical enrichment process developed successfully. The agency held public meetings near both of the facilities to allow for public input on the certificate renewal process. The NRC previously renewed the gaseous diffusion plant certificates in 2003.

To support growing industry interest in the potential recycling and reprocessing of spent nuclear fuel, the NRC staff continued its efforts to revise the regulatory framework for reprocessing. These efforts included completing a regulatory gap analysis, conducting a public meeting, and considering stakeholder feedback. In the regulatory gap analysis, the staff identified

approximately 20 areas or "gaps" in its current regulations that the NRC must or should address in order to establish an effective and efficient regulatory framework for licensing a reprocessing facility.

Working with the U.S. Department of Commerce, U.S. Department of State, and DOE, the NRC supported the implementation of the additional protocol to the U.S./International Atomic Energy Agency (IAEA) Safeguards Agreement (Additional Protocol) by revising 10 CFR Part 75, "Safeguards on Nuclear Material—Implementation of US/IAEA Agreement," and collecting and reviewing data from licensees subject to the additional protocol.

The NRC received two applications for COL licenses for uranium enrichment facilities. The first, submitted in December 2008 by AREVA, is for a centrifuge enrichment facility to be built near Idaho Falls, ID. The second, submitted in June 2009 by General Electric-Hitachi, is for a laser-based enrichment facility to be built in Wilmington, NC. The NRC has completed the initial environmental review scoping effort, including conducting several public meetings in the vicinity of the proposed facilities and meeting with affected State, local, and tribal officials.

The agency also sponsored the fourth annual Fuel Cycle Information Exchange (FCIX) conference. The FCIX involved multiple presentations by staff, industry, and stakeholders on various regulatory aspects of the nuclear fuel cycle, including a reprocessing recycling workshop with a multinational panel of experts. This was the most successful FCIX to date, with more than 250 participants. For more information on fuel facilities, see <http://www.nrc.gov/materials/fuel-cycle-fac.html>.

Investigation and Enforcement

Compliance with NRC requirements plays an important role in giving the agency confidence that safety is being maintained. NRC policies deter noncompliance and encourage prompt identification and timely, comprehensive corrective actions. Licensees, contractors, and their employees who do not achieve the high standard of compliance expected by the NRC are subject to enforcement sanctions. Each

enforcement action depends on the circumstances of the case. The NRC will not permit licensees to continue to conduct licensed activities if they cannot achieve and maintain adequate levels of safety. In FY 2009, the NRC took 10 escalated enforcement actions related to fuel facilities with \$32,500 in fines assessed.

Nuclear Material Users

The NRC licenses and inspects the commercial use of nuclear material for industrial, medical, and academic purposes. Commercial uses of nuclear materials include medical diagnosis and therapy, medical and biological research, academic training and research, industrial gauging and nondestructive testing, production of radiopharmaceuticals, and fabrication of commercial products (such as smoke detectors) and other radioactive sealed sources and devices. The NRC and 37 Agreement States regulate more than 22,500 specific materials licensees and 150,000 general materials licensees. The NRC currently regulates and inspects approximately 2,970 specific licensees for the use of nuclear byproduct and other radioactive materials. The NRC also expects to complete 2,900 materials licensing actions and 1,200 routine health and safety inspections.

In FY 2009, the NRC deployed the National Source Tracking System, a centralized national registry that provides lifetime accounting of certain high-risk radioactive materials used in industry, medicine, and research. Licensees had to begin using the system by January 31, 2009.

Virginia became an Agreement State on March 31, 2009, and New Jersey became the 37th Agreement State on September 30, 2009. Agreement States assume regulatory responsibility over certain types and small quantities of nuclear material. These two new Agreement States will take over regulatory responsibility for approximately 900 materials licensees.

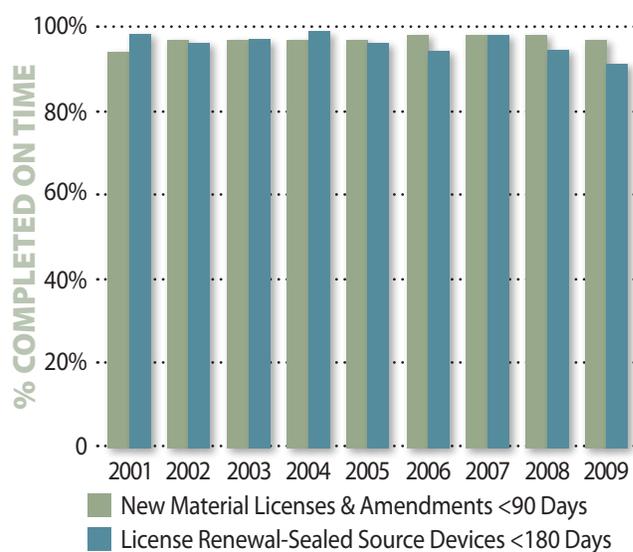
Detailed health and safety reviews of license applications, as well as inspections of licensee procedures, operations, and facilities, provide reasonable assurance of safe operations and the production of safe products. The NRC routinely inspects nuclear materials licensees to ensure that

they are using nuclear materials safely, maintaining accountability of those materials, and protecting public health and safety. The agency also analyzes operational experience from NRC and Agreement State licensees and regularly evaluates the safety significance of events reported by licensees and Agreement States.

In FY 2009, the NRC completed reviews of 2,726 materials licensing actions and 1,091 materials program inspections. From 2003 through 2009, the NRC has maintained the timeliness of its reviews of nuclear materials license renewals and sealed source and device designs. In addition, the NRC completed 97 percent of new application and license amendment reviews within 90 days and 91 percent of the requests for license renewal and sealed source and device design reviews within 180 days of receipt.

Figure 19

TIMELINESS REVIEW OF NUCLEAR MATERIAL LICENSING APPLICATIONS



The NRC also works with international counterparts, both bilaterally and through multilateral organizations, to enhance the safety and security of radioactive sources. Examples of these activities include participating in ongoing meetings of countries implementing the IAEA Code of Conduct on the Safety and Security of Radioactive Sources to ensure harmonized national approaches, and working bilaterally with countries of the Commonwealth of

Independent States to support regulatory control over high-risk sources of concern. (See the section on international activities for additional details.) For more information on nuclear material users, see <http://www.nrc.gov/materials/ql-materials.html>.

Rulemaking Activities

In FY 2009, the NRC undertook several rulemaking activities to allow the use of radioactive materials while protecting public health and safety and the environment. These activities included rulemaking to enhance domestic nonproliferation activities in accordance with IAEA recommendations, implementing improvements to the licensing and distribution of byproduct materials, revising the requirements for categorical exclusion from environmental review, and amending the preceptor attestation requirements for medical licensees. The agency also published several rules related to certificates of compliance that certify the safety of casks for the storage of spent nuclear fuel, under 10 CFR Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, and High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste,” including NAC-UMS Amendment 5; MAGNASTOR; HI-STORM100 Amendment 6; and NUHOMS Amendment 10.

The NRC is updating 10 CFR Part 110, “Export and Import of Nuclear Equipment and Material” to revise the definition of radioactive waste, incorporate changes to 10 CFR Part 110, Appendix P, “Category 1 and 2 Radioactive Material” based on experience gained throughout 2005-2008, and rewriting/clarifying 10 CFR 110.23, “General License for the Export of Byproduct Material,” for the export of byproduct material. The proposed rule was approved by the Commission and published for comment in the *Federal Register* in June 2009.

High-Level Waste Repository

In FY 2008, DOE submitted a license application to the NRC seeking authorization to construct a geologic repository at Yucca Mountain, NV. The NRC formally docketed the DOE license application for the proposed high-level waste repository and determined that it was

practicable to adopt DOE’s final environmental impact statement, subject to further supplementation.

In FY 2009, NRC technical staff began conducting a safety review of the license application. The agency is holding an impartial hearing proceeding as part of the licensing process. On October 17, 2008, the Commission issued a “Notice of Hearing and Opportunity To Petition for Leave To Intervene on an Application for Authority To Construct a Geologic Repository at a Geologic Operations Area at Yucca Mountain.” It published this notice in the *Federal Register* on October 22, 2008 (73 FR 63029). In December 2008, the State of Nevada; the State of California; the Nuclear Energy Institute; Inyo County, California; the Timbisha Shoshone Tribe; the Native Community Action Council; the Timbisha Shoshone Yucca Mountain Oversight Program Non-Profit Corporation; and the Caliente Hot Springs Resort filed petitions for leave to intervene, requests for hearings, and contentions. In addition, Inyo County in California and the Nevada counties of Nye, Churchill, Esmeralda, Lander, and Mineral (jointly); Clark; and White Pine also filed petitions for leave to intervene. On December 22, 2008, Eureka and Lincoln counties in Nevada filed requests to participate as interested governmental participants. The Commission received 322 contentions.

The NRC’s Chief Administrative Judge established three licensing boards, called Construction Authorization Boards, to preside over the proceeding. From March 12, 2009, through April 2, 2009, the construction authorization boards conducted prehearing conferences with parties, petitioners for intervention, and interested governmental participants. On May 11, 2009, the three Atomic Safety and Licensing Board Panel Construction Authorization Boards issued an order admitting eight parties and 299 contentions.

The NRC published final regulations (74 FR 10811) on March 13, 2009, implementing the U.S. Environmental Protection Agency’s (EPA’s) revised standards for doses that could occur after 10,000 years, but within the period of geologic stability. The final rule also specifies a range of values for the deep percolation rate to be used to represent climate change after 10,000 years,

as called for by EPA, and specifies that calculations of radiation doses for workers use the same weighting factors that EPA is using for calculating individual doses to members of the public. The final rule became effective on April 13, 2009.

The NRC continued to interact with DOE to assess technical and regulatory issues related to its spent fuel management program, which will use standardized transportation, aging, and disposal (TAD) canisters. The NRC received two TAD applications in late FY 2009, requesting approval for storage and transportation. The TAD canister will be the primary means for packaging spent nuclear fuel for interim storage and for transportation to and disposal in the proposed repository at Yucca Mountain. For more information on high level waste, see <http://www.nrc.gov/waste/hlw-disposal.html>.

Spent Fuel Storage and Transportation

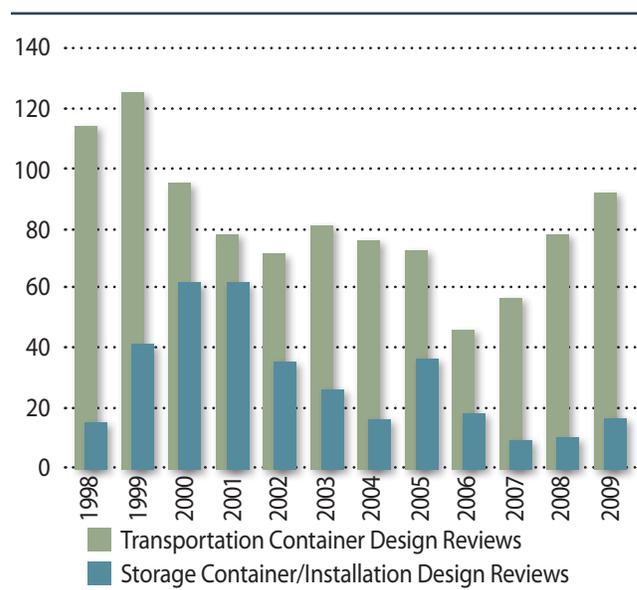
The NRC ensures that spent fuel is safely stored to support continued reactor operations and is safely transported when necessary. The NRC conducts licensing and certification reviews to ensure (1) storage facility and cask design compliance with NRC regulations for storage of spent fuel and (2) safe transport of domestic and international shipments of spent fuel and other risk-significant radioactive materials.

Licensees safely and securely transport shipments of radioactive materials each year within the United States. Several Federal agencies share responsibility for regulating the safety and security of those shipments. The NRC closely coordinates its transportation-related activities with those of the U.S. Department of Transportation and, as appropriate, DOE. To help ensure the safety and security of both spent fuel storage and transportation, the NRC inspects vendors, fabricators, and licensees using transport packages, spent fuel storage casks, and interim storage of spent fuel both at and away from reactor sites.

In FY 2009, the NRC completed 93 transport package design reviews and 17 storage cask and installation design reviews. The NRC review of transportation and interim storage licensing requests ensures that shipments are made in NRC-approved packages that

meet rigorous performance requirements and verifies that spent fuel is safely stored, thereby enabling continued reactor and decommissioning operations. The NRC also conducted 17 inspections of activities related to radioactive material package certificate holders, spent fuel storage cask certificate holders, and conducted dry run inspections at independent spent fuel storage facilities to ensure that licensees design, fabricate, and use casks according to approved safety requirements.

Figure 20
STORAGE AND TRANSPORTATION DESIGN REVIEWS COMPLETED



The NRC developed an effective strategy to address the pending expiration of numerous transportation certificates of compliance on October 1, 2008. This strategy helped to ensure public health and safety by creating a mechanism for continued shipment of certain materials using the existing radioactive material transportation packages. The NRC received and approved 15 applications from vendors and shippers requesting limited continued use of expired packages.

The NRC held two public workshops with the Nuclear Energy Institute (NEI) and the regulated industry to improve communications and clarify expectations on technical topics. The first public workshop focused on shielding and radiation protection requirements and

the methods used to demonstrate compliance with transportation and spent fuel storage regulations. The agency held a second public workshop on licensing and certification process improvements. The results of the workshop included a discussion of the draft acceptance review procedure. The NRC issued the draft procedure for public review and comment while the staff began piloting its use. Many vendors and licensees attended the workshops and provided very effective and positive feedback.

Investigation and Enforcement

Compliance with NRC requirements plays an important role in giving the agency confidence that safety is being maintained. NRC policies deter noncompliance and encourage prompt identification of issues and timely, comprehensive corrective actions. Licensees, contractors, and their employees who do not achieve the high standard of compliance expected by the NRC are subject to enforcement sanctions. Each enforcement action depends on the circumstances of the case. The NRC will not permit licensees to continue to conduct licensed activities if they cannot achieve and maintain adequate levels of safety. In FY 2009, the NRC took 62 escalated enforcement actions related to nuclear materials users and assessed \$69,000 in fines. Allegations of materials-related wrongdoing are referred to the Office of Investigations for appropriate action.

Decommissioning and Low-Level Waste

In FY 2009, the NRC provided oversight of decommissioning activities at approximately 70 power and early demonstration reactors, research and test reactors, uranium recovery sites, and complex materials sites and fuel cycle facilities. Decommissioning removes radioactive contamination from buildings, equipment, ground water, and soil, achieving levels that permit the release of the property, with or without restrictions on its future use by the public. The NRC terminates the licenses for decommissioned facilities after the licensees demonstrate that the residual onsite radioactivity is within regulatory limits and sufficiently low to protect public health and safety and the environment. Completion of decommissioning, environmental, and performance assessment activities enables sites to

return to productive use while ensuring that residual radioactivity does not pose an unacceptable risk to the public.

In addition to the uranium recovery sites undergoing decommissioning, the NRC conducts regulatory oversight at five operational uranium recovery sites and reviews and approves the applications for new, restarting, or expanding uranium recovery facilities. Additionally, the NRC conducted a number of regulatory activities to help ensure the safe management and disposal of the low-level radioactive waste generated by radioactive material users, nuclear power plants, and other NRC licensees. The agency performed monitoring visits and issued reports for the Savannah River Site Saltstone facility and Idaho National Laboratory.

In late September 2008, the NRC approved the application for restarting the COGEMA/Christiansen Ranch uranium recovery facility. In FY 2009, the NRC completed decommissioning activities at the Rancho Seco power reactor and the Sigma-Aldrich materials facility. Also in FY 2009, the NRC continued to review seven applications for new, expanding, or restarting uranium recovery facilities received in FY 2007, including initiating environmental reviews. The agency issued the final generic environmental impact statement for in situ uranium recovery facilities in June 2009. In FY 2009, the NRC completed the second annual "Waste Incidental to Reprocessing Monitoring Report." For more information on decommissioning, see <http://www.nrc.gov/about-nrc/regulatory/decommissioning.html>.

Research Activities

The NRC's safety research program evaluates and resolves safety issues for nuclear power plants and other facilities regulated by the NRC. The agency conducts its research program to evaluate existing and potential safety issues; supply independent expertise, information, and technical judgments to support timely and realistic regulatory decisions; reduce uncertainties in risk assessments; and develop technical regulations and standards. When possible, the NRC engages in cooperative research with other Government agencies, the nuclear industry, universities, and international partners.

During the past year, the NRC research program has addressed key areas that support the agency's safety mission. Some of the more important issues addressed include the verification and validation of fire safety models, material degradation of reactor system and pressure boundary components, new digital instrumentation and control systems, seismic hazard issues, and severe reactor accident consequence analyses.

Fire Safety

During FY 2009, the NRC's fire safety research program focused on risk-informed fire protection activities, which endorse National Fire Protection Association Standard 805. Work has also continued on fire modeling activities, including a fire modeling users' guide for nuclear power plant applications. NRC fire safety research continues to focus on fuel cycle issues and the performance of spent nuclear fuel transportation cask seals in beyond-design-basis fires.

Advanced Reactor Research

The NRC has initiated research activities in a number of major technical areas related to licensing a prototype high-temperature gas-cooled reactor that can be used to generate electricity and hydrogen.

Materials Degradation

The NRC continues to conduct research on materials degradation issues for currently licensed reactors. The purpose of this research is to identify susceptible materials and assess component-specific degradation mechanisms to ensure continued safe operation. The staff is also performing research on reactor internals to determine the effects of neutron fluence and thermal effects on the physical properties of reactor internal materials.

Digital Instrumentation and Controls

The NRC is actively engaged in research to support the licensing of new digital instrumentation and control systems intended for use in retrofits to operating reactors and in new and next-generation reactors. The NRC is also actively engaged in ongoing research associated with the evaluation of digital systems for cyber vulnerabilities.

Seismic Research (Earth Sciences)

The NRC is conducting research on seismic hazard issues to support the siting of new reactors and the evaluation of the seismic safety of existing nuclear facilities. In cooperation with academic institutions, other Federal and State agencies, and industry, the NRC is conducting a program to develop ground motion propagation and earthquake source zone models. In cooperation with the U.S. Geological Survey and the National Oceanic and Atmospheric Administration, the NRC is also conducting a study of potential tsunami sources and the potential hazards to NRC-regulated facilities.

State-of-the-Art Reactor Consequence Analysis

The NRC, the U.S. nuclear industry, and the international nuclear community have performed extensive severe accident research to improve their understanding of the phenomena of severe accidents; the performance of plant systems and components under these conditions; the timing, magnitude, and composition of the radioactive material release; the effectiveness of the different design and mitigative measures, including emergency preparedness; and the understanding of the effects of radiation exposure on humans.

Emergency Preparedness and Incident Response

NRC emergency preparedness and incident response activities ensure that adequate measures can and will be taken to mitigate plant events and to minimize possible radiation doses to members of the public, and ensure that the agency can respond effectively to events at its licensees' sites.

The agency is currently engaged in a rulemaking effort that proposes to update the emergency preparedness regulations. Enhancements to the regulations include codifying voluntary industry efforts since September 11, 2001. The NRC issued the proposed rule in the *Federal Register* on May 18, 2009, and extended the public comment period, based on stakeholder feedback, to October 19, 2009. In June 2009, the NRC held 11 joint public meetings with the Federal Emergency Management Agency

(FEMA) on the proposed rule and associated draft guidance documents in each NRC region and near NRC headquarters. During these public meetings, the NRC demonstrated its openness in the regulatory process and increased overall stakeholder involvement by hosting the meetings in both live and Web-based meeting formats using new technologies. Participants from all over the country who did not have the opportunity to travel to the meeting were able to participate effectively, using those new technologies.

In 2009 the NRC continued to work with States to address the replenishment of potassium iodide supplies, to be used as a supplement to public protective actions, within the 10-mile emergency planning zones around nuclear power plants. The Commission has decided to modify its potassium iodide distribution policy from a one-time replenishment to one providing the tablets to affected States that request them and then replenishing stockpiles upon States' requests, consistent with the tablet shelf life.

In FY 2009, the NRC maintained its headquarters Operations Center and modernized two legacy computer systems in order to improve functionality, enhance cyber security, and reduce operating costs. The new systems provide needed capabilities for handling multiple, ongoing events and provide the ability to quickly and accurately share information with NRC responders in the regions, at sites, or at Headquarters. The NRC also continued its modernization of the Emergency Response Data System, which provides real-time information from nuclear power plants during events to the NRC and State emergency operations centers. The modernization of this system includes improvements to the user interface, accessibility via the Internet, and enhanced cyber security.

In FY 2009, the NRC engaged in multiple emergency exercises with its licensees and Federal partners. NRC emergency responders participated in 13 exercises with licensee sites across the country, 4 of which involved the NRC headquarters response team. These exercises focused on the implementation of onsite and offsite radiological emergency plans by the licensee, as well as State and local responders. The NRC also

uses exercises to train its response organization and to practice coordination activities with Federal partners, including the U.S. Department of Homeland Security. The NRC participated in hostile-action-based (HAB) emergency preparedness drills at the Three Mile Island and Turkey Point stations and coordinated with FEMA to observe numerous other HAB drills conducted as part of industry's voluntary program to gain a better understanding of the unique challenges that hostile-action events pose.

In addition to exercises involving its licensees, the NRC participated in Federal emergency exercises during FY 2009, including the National-Level Exercise (NLE 09), the annual Continuity Exercise (Eagle Horizon 09), and a Federal Radiological Monitoring and Assessment Center field exercise (Empire 09).

The 2009 H1N1 influenza outbreak provided an opportunity to revisit the agency's plans and prioritize improvements for implementation in advance of the next flu season. The agency used Federal guidance to shape preplanned actions for the protection of the NRC workforce. The NRC worked with the nuclear industry to coordinate plans, with the goal of ensuring that the nuclear sector is prepared to address the challenges of a pandemic and maintain the standards of safety and security required for operations. For more information on emergency preparedness, see <http://www.nrc.gov/about-nrc/emerg-preparedness.html>.

International Activities

The NRC's international efforts include participation in activities that support U.S. Government compliance with international treaties and agreements; export/import licensing of nuclear facilities, equipment, and materials; programs of bilateral nuclear cooperation and assistance; and support for multinational nuclear safety organizations such as IAEA and the Organisation for Economic Co-operation and Development's Nuclear Energy Agency.

Notable accomplishments in FY 2009 in the area of international treaties and agreements include high-level NRC participation in the May 2009 Review Meeting of Contracting Parties to the Joint

Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management, and Commission review of U.S. Government agreements for peaceful uses of nuclear energy with the United Arab Emirates. The Commission completed work with NRC licensees and rulemaking activities to finalize the initial reporting requirements for compliance with the U.S. Protocol Additional to the Agreement between the United States and the IAEA.

In the area of export/import licensing, the NRC continued to work both domestically and internationally to enhance nuclear safety and security through the regulatory oversight of radioactive sources (see the section on nuclear materials users for specific examples). In July 2009, the NRC attended an IAEA open-ended meeting of technical and legal experts to share information on lessons learned from implementation of the “Supplementary Guidance on Import and Export of Radioactive Sources.”

Accomplishments in the area of bilateral activities during FY 2009 include the first steps in implementing the information exchange arrangement with the National Nuclear Safety Administration of China and a similar information exchange arrangement with the Vietnam Agency for Radiation and Nuclear Safety and Control.

The NRC continues to support the development and implementation of programs focused on leveraging the knowledge and resources within the international regulatory community in the licensing of new reactor designs. In the multilateral context, the NRC continues its leadership role in the Multinational Design Evaluation Program, through which regulatory authorities in over a dozen countries share expertise and resources in reviewing new and future reactor designs. Currently, the program consists of three issue-specific and two design-specific working groups. The Digital Instrumentation and Controls Working Group, led by the United States, established common positions in digital instrumentation and control system design. The Vendor Inspection Cooperation Working Group has conducted several parallel inspections that involved more than one regulator, and the Codes and

Standards Working Group is nearing completion of a project to compare the pressure boundary codes of four member countries. The design-specific working groups, based on the Westinghouse AP1000 and the AREVA EPR designs, also each established three sub-working groups. In FY 2009, the Policy Group, which is the governing body of the program, extended the commitment to the program from 2 to 5 years while requiring that each working group achieve significant interim results.

The NRC has worked both domestically and internationally (bilaterally and multilaterally) to enhance nuclear safety and security through the regulatory oversight of radioactive sources. In FY 2009, the NRC expanded assistance efforts related to radioactive sources for the regulatory authorities of the Commonwealth of Independent States, expanded assistance provided to the Iraqi Radioactive Source Regulatory Authority, established initial assistance efforts for select regulatory authorities in Africa, and enhanced support for and coordination with source-related assistance activities conducted by IAEA. The NRC has also worked with other U.S. agencies and IAEA to develop international security guidance documents for materials control, accounting, and physical protection.

The NRC participated in a working group with representatives of DOT and the Canadian Nuclear Safety Commission to publish in March 2009 NUREG-1886, “Joint Canada-United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages.” This NUREG will provide the framework for U.S. and Canadian cooperation and acceptance of each country’s Type B(U) and fissile materials transportation package design approvals for export and import. The NRC expects to sign a Memorandum of Understanding by the end of FY 2009 for joint implementation of the Guide.

The NRC has put considerable effort into bilateral inspection training activities, especially with Finland, Japan, South Korea, and Taiwan, as these countries are building new reactors and/or are the site of major nuclear manufacturing facilities. Future cooperation

with the regulatory bodies in these countries is expected as more vendors become active in the nuclear market.

STRATEGIC GOAL 2: SECURITY

Ensure Adequate Protection in the Secure Use and Management of Radioactive Materials

Strategic Outcome

The NRC has the following strategic outcome associated with the agency’s goal to ensure the secure use and management of radioactive materials: Prevent any instances where licensed radioactive

materials are used domestically in a manner hostile to the security of the United States.

RESULTS: In FY 2009, the NRC achieved its security goal strategic outcome.

Performance Measures

The table below lists the agency’s annual performance measures and their outcomes for the past 6 years.

The performance measures are used to determine the agency’s success in achieving its security goal. The NRC met all of the FY 2009 security goal performance measure targets.

FY 2009 Security Goal Performance Measures						
Measure	2004	2005	2006	2007	2008	2009
1. Number of unrecovered losses or thefts of risk-significant radioactive sources is zero.	0	0	0	0	0	0
2. Number of substantiated cases of theft or diversion of licensed, risk-significant radioactive sources or formula quantities of special nuclear material, or attacks that result in radiological sabotage is zero.	0	0	0	0	0	0
3. Number of substantiated losses of formula quantities of special nuclear material or substantiated inventory discrepancies of formula quantities of special nuclear material that are judged to be caused by theft or diversion or by substantial breakdown of the accountability system is zero.	0	0	0	0	0	0
4. Number of substantial breakdowns of physical security or material control (i.e., access control containment or accountability systems) that significantly weaken the protection against theft, diversion, or sabotage is less than or equal to one.	0	0	0	0	0	0
5. Number of significant unauthorized disclosures of classified and/or safeguards information is zero.	0	0	0	0	0	0

Analysis of FY 2009 Results

1. **Unrecovered losses or thefts:** This measure includes any loss or theft of radioactive nuclear sources that the NRC has determined to be risk significant. The measure tracks the NRC's performance in ensuring that those radioactive sources that the agency has determined to be risk significant for public health and safety are accounted for at all times. The ability to account for these sources is vital to securing the Nation's critical infrastructure from "dirty bomb" attacks or other means of radioactive material dispersal. There was no loss or theft of radioactive nuclear material that the NRC determined to be risk significant during FY 2009.
2. **Thefts or diversion:** This measure includes whether NRC-licensed facilities maintain adequate protective capabilities to prevent theft or diversion of nuclear material or sabotage that could result in harm to public health and safety. There were no substantiated cases of theft or diversion of licensed, risk-significant radioactive sources or formula quantities of special nuclear material or attacks that resulted in radiological sabotage during FY 2009.
3. **Loss or inventory discrepancy:** This measure includes whether special nuclear material is accounted for at all times and whether any losses of this material occur that could lead to the creation of an improvised nuclear device or other type of nuclear device. Furthermore, the measure tracks whether the systems in place at NRC-licensed facilities maintain accurate inventories of special nuclear material that the facilities process, use, or store. There were no substantiated losses of formula quantities of special nuclear material or substantiated inventory discrepancies of formula quantities of special nuclear material that were caused by theft or diversion or by substantial breakdown of the accountability system during FY 2009.
4. **Substantial breakdowns of physical security:** This measure includes any breakdowns in access control, containment, or accountability systems that significantly weakened the protection against

theft, diversion, or sabotage for nuclear materials that the Commission has determined to be risk significant. There were no substantial breakdowns of physical security during FY 2009.

5. **Significant unauthorized disclosures:** This measure includes significant unauthorized disclosures of classified and/or safeguards information that cause damage to national security or public safety. This measure tracks whether information that can harm national security (classified information) or cause damage to public health and safety (safeguards information) has been stored and used in such a way as to prevent its disclosure to the public, terrorist organizations, other nations, or personnel without a need to know. There were no significant disclosures that caused damage to national security or public safety during FY 2009.

Nuclear Security Activities

The NRC must remain vigilant of the security of nuclear facilities and materials. The agency achieves its goal of protecting the common defense and security by using licensing and oversight programs similar to those employed in achieving its safety goal. The NRC aims to allow licensees to realize the benefits of nuclear materials through their secure use, while at the same time placing only those regulatory requirements that are necessary on those licensees. Listed below are noteworthy NRC accomplishments in the area of nuclear security. For more information on nuclear security, see <http://www.nrc.gov/security/domestic.html>.

Security Inspections

The NRC continued to maintain vigilant oversight of security in the nuclear industry and to implement the agency's security procedures. There were no substantial breakdowns of physical security at any commercial nuclear power plant, as determined by the NRC's implementation of its baseline security inspection program. This inspection effort resides within the "security cornerstone" of the agency's ROP. The security cornerstone focuses on the following five key licensee performance attributes: access

authorization, access control, physical protection systems, material control and accounting, and response to contingency events. Through the results obtained from all oversight activities, including baseline security inspections and performance indicators, the NRC determines whether licensees comply with requirements and can provide high assurance of adequate protection against the design-basis threat for radiological sabotage.

The NRC regularly carries out force-on-force inspections at commercial operating nuclear power plants and Category I fuel cycle facilities as part of its comprehensive security program. The agency uses these inspections to evaluate the effectiveness of plant security programs to prevent radiological sabotage. The agency conducts force-on-force inspections at least once every 3 years at each commercial nuclear power plant and Category I fuel facility.

Force-on-force inspections assess a nuclear facility's ability to defend against the design-basis threat, which characterizes the adversary against which plant owners must design appropriate defenses, such as physical protection systems and response strategies. A force-on-force inspection includes both tabletop drills and simulated combat between a mock commando-type adversary force and the nuclear facility's security force. In FY 2009, the agency completed 11 force-on-force inspections and submitted the fourth annual Report to Congress on the results of the security inspection program.

The agency also pursued recommended enhancements to its allegation and inspection programs based on a lessons-learned review that followed an agency investigation into reports of inattentive security officers at the Peach Bottom nuclear power plant in Pennsylvania. To address lessons learned, on December 29, 2008, the agency issued revised guidance on contacting alleged, engaging licensees with requests for information, and independently validating licensee inputs, among other things.

The NRC worked with DOE to recover unwanted or orphaned radioactive sources. The source recovery program aids in preventing inadvertent source disposal during recycling, and guards against

malevolent use of sources. Since the inception of this program in 1997, more than 17,700 radioactive sources have been recovered from more than 690 sites within the United States. In FY 2009, over 2,000 radioactive sources were recovered.

The NRC is assisting U.S. Customs and Border Protection in fulfilling its congressional mandate to verify the legitimacy of radioactive material shipments coming into the United States through established ports of entry. The NRC regularly provides Customs and Border Protection information on the licensing of radioactive materials, including import and export licensing data, and has established processes to provide around-the-clock technical support for the verification of licensing status for materials in transit.

In addition to continuing to evaluate the need to enhance security at byproduct material licensees in FY 2009, the NRC inspected licensee compliance with the safety and security measures and coordinated with Agreement States to identify and resolve any implementation issues. The NRC also issued security orders to irradiator facilities, manufacturer and distributor facilities, and licensees shipping IAEA Category 1 quantities, including orders requiring this group of licensees to implement a program to fingerprint and conduct criminal history checks for access to safeguards information and material. The NRC and Agreement States issued orders and legally binding agreements to licensees subject to increased controls that require fingerprinting and criminal history checks for access to material. The NRC and Agreement States will continue to inspect these licensees to ensure the proper implementation of the increased control orders and other associated requirements. The NRC revised its screening process for new license applications to increase assurance that the material will be used as intended.

Security Rulemaking

During FY 2009, the NRC continued rulemaking activities to stabilize the security requirements that it places on its licensees. The NRC completed the rulemakings for 10 CFR Part 73, "Physical Protection of Plants and Materials," which became effective on May 26, 2009, and has a compliance

date of March 31, 2010. The final rule fulfilled the Commission's intent to complete a thorough review of physical protection program requirements and orders issued after September 11, 2001, and codify them as generically applicable security requirements. Other significant additions to the security regulations include requirements for cyber security, mitigative strategies and response procedures for potential or actual aircraft attacks, and assessment and management of the interface between safety and security. The agency finalized the fitness-for-duty rule, proposed revisions to the access authorization and physical protection rule, and published a proposed rule for Nuclear Materials Management and Safeguards System database reporting. The agency also implemented interim fingerprinting requirements.

During FY 2009, the NRC continued its progress in developing regulations for security requirements for possession and use of Category 1 and 2 quantities of radioactive material. Among other provisions, the rule would include fingerprinting requirements and background investigations. The NRC posted preliminary draft rule language for public comment. The rule would include security requirements for the transportation and use of Category 1 and 2 quantities of radioactive material to provide reasonable assurance of preventing the theft or diversion of the material for malevolent purposes.

In addition, the agency made significant progress in the development of security infrastructure for new reactor licensing. The infrastructure includes the development of standard review plans for early site permits, design certifications, and COLs as well as guides for security assessment format and content. The agency also provided guidance to the industry on the new rule by developing regulatory guides for physical security, security officer training and qualification, cyber security programs, and the access authorization program. The NRC continued interactions with DHS on security infrastructure through periodic meetings. The NRC also completed its initial security review for the design certification of the General Electric ESBWR, provided technical support for a draft regulatory guide on COLs, and finished its security review of the early site permit for the Vogtle plant.

Control of Radioactive Sources

In FY 2009, the NRC continued its efforts to mitigate the potential risk of terrorist threats through enhanced security and controls for the use, storage, and transportation of byproduct material and spent nuclear fuel. In collaboration with DHS, DOE, and other Federal, State, and local agencies, the NRC continued to assess the potential use of risk-significant sources in radiological dispersal devices and to coordinate efforts to enhance radioactive source protection and security.

The NRC worked with Agreement States to implement requirements imposed on licensees that enhance the security and control of risk-significant radioactive material, including development of an inspection program to verify the implementation of these measures. In FY 2009, the NRC and Agreement States issued orders or other regulatory requirements to these licensees to require fingerprinting for those persons with unescorted access to risk-significant radioactive material. The NRC also continued activities to implement the national source tracking rule, which requires licensees to report information beginning on January 30, 2009, for inclusion in a database to track the possession of risk-significant radioactive sources. The rule requires NRC and Agreement State licensees to report transactions involving the manufacture, transfer, receipt, and disposal of nationally tracked sources (i.e., Category 1 and 2 sources from the IAEA Code of Conduct on the Safety and Security of Radioactive Sources). In response to a Government Accountability Office investigation of the ease of obtaining a new license for radioactive sources, the NRC and Agreement States have implemented a process to screen new license applications or applicants to determine, with reasonable assurance, that they will use the requested materials as intended.

The NRC continued its significant participation in implementing portions of the IAEA Code of Conduct on the Safety and Security of Radioactive Sources, as well as its participation in IAEA committees that are developing guidance documents for the security of radioactive sources during use, storage, and transport. The NRC's involvement in these committees enhances security and public safety and contributes to international and domestic regulatory consistency.

Under 10 CFR Part 110, between October 1, 2008, and June 23, 2009, the NRC issued 36 licenses for the export/import of Category 1 and 2 materials as defined by the Code of Conduct.

In FY 2009, the NRC continued efforts to establish and monitor classified information security programs for uranium enrichment vendors and a MOX facility. These efforts included readiness reviews of the Louisiana Energy Service (LES) National Enrichment Facility (NEF), in Eunice, New Mexico; USEC's Lead Cascade/American Centrifuge Project, in Piketon, Ohio; and the General Electric-Hitachi Global Laser Enrichment facility in Wilmington, North Carolina; as well as processing applications for facility security clearances under the National Industrial Security Program. These reviews included an evaluation of physical and information system security at these sites and for licensee contractors performing classified work, as well as evaluating foreign ownership, control, or influence considerations in support of the facility security clearance. In addition, NRC personnel participated in the Quadripartite Working Group and DOE meetings related to the classification and technology guides for the protection of restricted data associated with the LES project. In July 2009, NRC personnel observed the hot acceptance testing of the first two TC-12 production centrifuges assembled at the LES NEF. The NRC has also performed an acceptance review of the information security plan submitted as part of the proposed AREVA Eagle Rock Enrichment Facility at Eagle Rock, Idaho. The agency is presently working on a memorandum of understanding with DOE and the National Nuclear Security Administration on security controls for the MOX facility in Aiken, South Carolina.

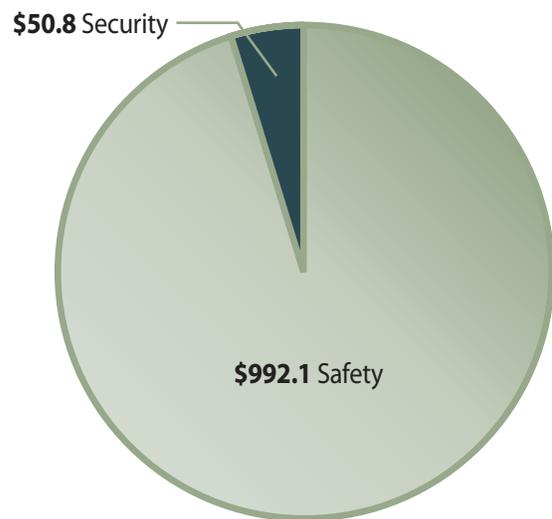
Spent Fuel

In FY 2009, the NRC completed six security plan reviews for proposed independent spent fuel storage installations and issued security orders to five new independent spent fuel storage installation licensees. The security orders imposed additional security measures for physical protection, access authorization, and fingerprinting. The NRC also reviewed and approved five spent fuel transportation routes.

Costing to Goals

The NRC is working to improve its cost management capabilities to better align its costs with desired outcomes. This year's Performance and Accountability Report presents the full cost of achieving the safety and security goals for the agency's programs, Nuclear Reactor Safety and Security and Nuclear Materials Safety and Security. The cost of achieving the agency's safety goal was \$992.1 million, and the cost of achieving the agency's security goal was \$50.8 million (see Figure 21).

Figure 21
NRC SAFETY AND SECURITY COSTS
 (In Millions)



Organizational Excellence Objectives

The NRC has three organizational excellence objectives: openness, effectiveness, and operational excellence. These objectives are critical components of carrying out the agency's regulatory mandate to serve the American people.

Openness

The agency views nuclear regulation as the public's business and, as such, it should be transacted openly

and candidly in order to maintain the public's confidence. The openness objective explicitly recognizes that the public must be informed about, and have a reasonable opportunity to participate in, the NRC's regulatory processes.

Nuclear Reactor Safety

The Office of Nuclear Reactor Regulation (NRR) maintains current documentation on the various programs of the Office of Nuclear Reactor Regulation on the office's Web site, including program processes, fact sheets, and public meeting schedules, and makes correspondence available through the Agencywide Documents Access and Management System (ADAMS). For example, the License Renewal Program portion of the office's Web site provides the public information on the licensing process, regulatory guidance, and the status of current activities associated with the renewal of licenses for commercial operating reactors. In FY 2009, the nuclear reactor regulation program exceeded its target level for ensuring that public meetings were posted on the Web site at least 10 days in advance of the meeting. The NRC conducted several successful outreach activities in the vicinity of the San Onofre and Diablo Canyon nuclear plants in California. Following these poster sessions and town hall meetings, the NRC received positive feedback from multiple stakeholders regarding the productive and effective discussion of salient topics of local interest.

Nuclear Material and Waste Safety

The NRC continues participation in the Institute of Nuclear Materials Management Spent Fuel Seminar, regional meetings of the Council of State Governments, the U.S. Transport Council meetings, and the Nuclear Energy Institute Dry Cask Storage Forum, as well as in meetings with industry and local, State, and other Federal agencies on radioactive material transportation and spent fuel storage matters.

The NRC meets with stakeholders to discuss spent fuel reprocessing issues. The staff met with NEI representatives in February 2009 to discuss NEI's white paper on a regulatory framework for reprocessing. A more comprehensive workshop that provided the perspectives of industry, intervenors, and the international community took place during the last day of the FCIX.

The NRC has also engaged stakeholders in its effort to develop a fuel cycle oversight program that has an improved degree of transparency, predictability, objectivity, and consistency, and that incorporates risk-informed and performance-based tools. Two meetings took place in June 2009 with industry representatives and members of the public, and the NRC is planning periodic public meetings as the initiative progresses.

The NRC continues to hold public meetings on issues related to fuel cycle licensing and inspections, including management and outreach meetings with State, local, and other Federal agencies for new fuel facilities under construction (LES, MOX Fuel Fabrication Facility) or under review (AREVA and General Electric-Hitachi enrichment plants).

In response to an invitation by the Native American Forum on Nuclear Issues, the NRC staff presented an overview of the process and current status of the NRC technical review of the DOE high-level waste repository license application. The staff represented the agency at a "Champions of Participation" working session that developed recommendations to President Obama's Open Government Directive. A staff member traveled to Boston and received an award as one of "CAREERS and the disABLED" magazine's Employees of the Year. The next day, staff members recruited for the NRC at the Career Expo for People with Disabilities. The NRC staff continued to hold public NRC/DOE management meetings on the license application review process for a high-level waste repository.

In the decommissioning and low-level waste arena, the NRC held public meetings in FY 2009 to discuss the decommissioning plan for the Shieldalloy materials site, the license termination plan for the Fermi power reactor, and the post shutdown decommissioning activities report for the nuclear ship Savannah. The NRC staff also met with the uranium recovery industry to discuss a draft regulatory issue summary on the NRC's draft policy for licensing in-situ recovery facilities. The NRC held 15 technical meetings with uranium recovery applicants and licensees that were open to the public, stakeholders, and Native American Tribes for observation. The NRC briefed the Commission separately on the uranium recovery program and the low-level waste program and

invited representatives from other Federal and State regulatory agencies and interested stakeholders to make presentations and discuss their concerns with the Commission.

In the nuclear materials users arena, the NRC has engaged the public and stakeholder participants by providing timely notification of open meetings and by participating in national meetings of the Organization of Agreement States, the Conference of Radiation Control Program Directors, and the Health Physics Society with agency stakeholders. The NRC provides timely reviews of Freedom of Information Act requests and input to NRC administrative and Federal court proceedings. The staff completes the NRC allegations and investigations in a timely manner and provides responses to the allegers. In August 2009, 43 governor-appointed State Liaison Officers (SLO) attended the 2009 National State Liaison Officers Conference in Rockville, Maryland. The conference focused on cooperation, communication, and coordination in efforts by the NRC and the SLOs in working together to protect people and the environment. In August 2009, the NRC participated in the Bi-Annual Summit of the Yukon River Inter-Tribal Watershed Council, an organization that represents 53 Federally recognized tribes located in Alaska and 17 First Nations (Native Tribes in Canada). The NRC addressed summit attendees and familiarized them with NRC's roles, responsibilities, and its regulatory authority, and discussed staff's approach for developing Native American protocols at the NRC. The NRC also met with foreign counterparts to share information and respective lessons learned concerning the implementation of the export/import licensing provisions in the IAEA Code of Conduct on the Safety and Security of Radioactive Sources.

Effectiveness

The drive to improve performance in Government, coupled with increasing demands on the NRC's resources, requires the NRC to become more effective, efficient, and timely in its regulatory activities. The agency's initiatives related to effectiveness serve to sharpen the agency's focus on safety and security and to ensure that its available resources are optimally directed toward accomplishing the agency's mission.

Nuclear Reactor Safety

The Replace with Office of Nuclear Reactor Regulation (NRR) continues to ensure the Licensing and Oversight Programs operate effectively through the monitoring of program goals and results in accordance with agency-wide initiatives. At the program level, NRR continues to develop risk-informed and performance-based approaches to provide appropriate insights to decision makers. NRR uses state of the art methods and risk insights to improve the effectiveness and realism of NRC activities and licensing reviews resulting in high quality and timely decisions under the licensing program. NRR continues to rely and build upon industry operating experience and available information technology to improve our programs such as our efforts to optimize the ROP inspection program. NRR continues to update the infrastructure for the license renewal program, which includes updating the Generic Aging Lessons Learned (GALL) Report and Generic Environment Impact Statement (GEIS) for license renewal, to increase the efficiency of the program for present and future years.

The NRR is currently working on improving internal processes such as developing and issuing requests for additional information and safety evaluations in support of license amendment requests. NRR is also revising scheduling procedures for LARs to be more consistent with the licensee's need for and the complexity of the LAR. NRR is also examining the feasibility of expanding enterprise project management from selected applications to all licensing actions. This project is projected to be used as a replacement for the current legacy scheduling system in use at NRR, which will result in better project management.

Overall, the NRR programs continue to be effective through use of lessons learned from event responses, inspections and operational experience, and feedback leading to improved inspection and licensing programs in FY 2009.

Nuclear Material and Waste Safety

The NRC began a number of initiatives to improve the efficiency and effectiveness of its radioactive material transportation and spent fuel storage program. Examples include (1) working cooperatively with

industry to develop procedures for license application acceptance reviews, (2) documenting a transparent process to prioritize new and ongoing activities, and (3) developing an approach for performing more focused regulatory reviews of calculations and methodologies using risk information, lessons learned, and operating experience to guide the depth of the reviews.

In 2009 the agency maintained the viability of the High-Level Waste Repository Program and the Center for Nuclear Waste Regulatory Analysis. The NRC met its review schedule and provided hearing support for the review of 319 contentions.

The NRC made substantial progress in updating the fuel facility regulatory infrastructure (regulatory guides and standard review plan) to reflect current agency positions and operating experience. This ensures that regulatory actions are more consistent, predictable, and transparent.

In the decommissioning and low-level waste arena, as part of the NRC's license application review process, staff performs an acceptance review to determine if the license application contains adequate information to begin a detailed technical review. This ensures that the NRC staff does not expend resources reviewing submissions that contain incomplete or inadequate information. Further, to assist in the review of in situ recovery applications, the NRC published a final GEIS. The GEIS contributes to the agency's application review process by addressing common environmental issues associated with the construction, operation, and decommissioning of in situ recovery facilities, as well as the ground water restoration at such facilities, if they are located in particular regions of the western United States. The NRC estimates that issuance of the GEIS will result in a total savings for all application reviews of as much as \$7 million and will reduce review time by 2 years per application. Additionally, the NRC has initiated negotiations with the Bureau of Land Management to develop a memorandum of understanding to allow for cooperation between the two agencies on environmental review documents to meet the requirements of the National Environmental Policy Act.

Operational Excellence

The agency strives for operational excellence in carrying out all of its regulatory responsibilities. This objective focuses on activities relating to the management of finances, human capital, information, and infrastructure. This objective supports the agency by ensuring that the necessary infrastructure is in place to accomplish the agency's mission.

Financial Management

The Office of the Chief Financial Officer (OCFO) made substantial progress in its effort to modernize the agency's financial systems during FY 2009. It implemented an e-Travel system across the agency, upgraded the Budget Formulation System, initiated the upgrade of the Time and Labor System to a Web-based paperless system, and is proceeding with a systems modernization effort for the agency's core accounting system.

OCFO improved outreach by holding a public meeting to discuss and inform stakeholders of the agency's fee and budget processes. It expanded a cross-servicing agreement with the agency's shared service provider (U.S. Department of the Interior/National Business Center) to include processing agency-wide obligations.

OCFO continued to achieve operational excellence in financial reporting. The agency received an unqualified opinion on the FY 2008 financial statement with no material weaknesses and its eighth consecutive Certificate of Excellence in Accountability Reporting award. The Mercatus Center also credited the NRC-OCFO with a high ranking for the agency's Performance and Accountability Report. The agency strengthened its risk assessment and reasonable assurance process to be a more thoughtful, deliberative process by focusing on management support, updating guidance and processes, and providing online training to all agency employees.

OCFO completed an assessment of its organizational functions, processes, and roles and responsibilities. Additionally, the agency identified Federal Chief Financial Officer best practices and compared them to those used by the NRC's OCFO. The NRC will execute an action plan to align the agency's OCFO

to the Federal best practices. Operationally, OCFO placed increased emphasis on improving execution of the NRC budget to align the spending forecast to the agency's acquisition planning. OCFO continues to lead an agency-wide effort to significantly reduce prior fiscal year unliquidated obligations. It also emphasized better customer service and outreach to internal and external NRC stakeholders.

Management of Human Capital

There has been and continues to be a critical shortage of personnel in the nuclear sector as the current workforce retires and normal attrition occurs. The NRC has an ongoing education grant program to provide grants to educational institutions in the areas of curriculum development, faculty development, fellowships, scholarships to 4-year institutions, and scholarships to trade schools and community colleges. These grants assist in the development of the next-generation nuclear workforce. The NRC made more than 85 grants in FY 2008 to educational institutions and an additional 100 or more grants in FY 2009. These grants focus on the areas of nuclear engineering, health physics, radiochemistry, and other related areas that benefit the nuclear sector.

In FY 2009, the NRC implemented several of the recommendations developed by a Lean Six Sigma process review team to meet the timeliness standards established by the U.S. Office of Personnel Management end-to-end hiring model. This effort will reduce the time necessary to bring personnel into the agency.

The agency launched the NRC Knowledge Center, an agency-wide collection of electronic Communities of Practice designed to enable staff to collaborate, capture, and share knowledge in order to build organizational memory. The NRC established an Expertise Exchange to capture the lessons learned and best practices from the agency's most experienced staff. The NRC is also contacting experts in knowledge management and strategic workforce planning across the Federal government and in industry to identify best practices and lessons learned.

Information Technology and Information Management

The NRC has engaged internal stakeholders in efforts to identify impediments to program performance and information availability that can be addressed with information technology. As a result of these activities, the agency identified three major focus areas for improving business operations through the application of information technology and information management: working from anywhere, organizational productivity, and universal access.

The top priority area, working from anywhere, refers to enabling the staff to communicate securely and use the needed systems and information, whether the person is telecommuting, on travel, or moving between the NRC's various locations. Accomplishments in this area included increasing the availability of wireless handheld devices and secure laptops, instituting a "loaner laptop" program, upgrading the agency's video-teleconferencing system, modernizing the agency's remote access system used by telecommuters and the agency's resident inspectors, increasing the capacity of the agency's Internet connection to enable more effective Web streaming of agency meetings, increasing electronic access to industry codes and standards needed by the licensing staff, and providing electronic access to the agency's technical and law library catalogs.

Improving organizational productivity means enabling individuals and groups to work more efficiently to accomplish the agency's mission. Progress in this area included making collaboration software available agencywide and enabling Web-based electronic meetings.

The ultimate goal of universal access is to enable authorized individuals to access NRC facilities, information technology systems, and needed information securely through a single access authorization mechanism. Progress on universal access included improvements to the NRC's network directory necessary to lay the groundwork for reducing the number of required sign-ons, elimination of duplicate sign-on to the NRC network, and successful implementation of managed public key infrastructure for external and internal use.

In the area of records management, the NRC made improvements in the automation of e-mail, document capture, and records retention and disposition. Knowledge management continues to be a key component of organizational excellence to ensure that organizational knowledge is retained.

Infrastructure Management

This year, the NRC Office of Administration (ADM) completed the acquisition of additional interim buildings near the White Flint Headquarters campus to address the growth in staff to support the New Reactor Program and other licensing activities. The NRC has a total of four interim locations near its Headquarters. Pending completion of a final building to bring all staff back to the Headquarters campus, ADM established a Staying Connected Working Group to develop strategies to maintain the feeling of employee cohesiveness. ADM has taken several steps to improve the efficiency of support services and make it easier to accomplish agency goals. It has expanded shuttle services to transport employees who need to attend meetings, special events, and training in various Headquarters-area buildings. It has also created work stations in each Headquarters-area location equipped with telephones and computers to enable employees to conduct business while at locations other than their primary duty station. In addition, ADM has increased physical security to meet the needs of the expanding number of facilities.

In addition to subjecting all NRC employees to both preassignment and random drug testing, ADM has now implemented a similar drug testing program for NRC contractors. The new program provides both preassignment and random drug testing for badged and unbadged NRC contractors who are in sensitive positions (i.e., those operating government vehicles and carrying weapons, as well as those who require unescorted access to nuclear power plants and access to safeguards or classified information) or those who admit to recent illegal drug use. The expansion to include this program increases the effectiveness of personnel security by ensuring that those contractors in sensitive positions conform to the NRC's Drug-Free Workplace plan.

Program Evaluations

The NRC's Strategic Plan for Fiscal Years 2008–2013 describes a number of ongoing program evaluations that the NRC was scheduled to conduct for a self-assessment of its regulatory operations. This section lists the results of these program evaluations.

Operator Licensing Program

An NRC review team evaluated the overall effectiveness of the Region I and IV operator licensing programs and their adherence to the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and other policy documents. The review divided the operator licensing programs into seven functional areas, rated as "satisfactory" or "needs improvement." Overall, the operator licensing programs in Regions I and IV are being conducted in accordance with NUREG-1021. For both regions, the review team assessed all areas as satisfactory. The review team also commended the regions' efforts to improve the quality of their examination packages on ADAMS.

Reactor Oversight Program

The NRC completed the calendar year 2008 ROP self-assessment in April 2009. The report, SECY-09-0054, "Reactor Oversight Process Self-Assessment for Calendar Year 2008," dated April 6, 2009, is available through the NRC public Web site.

The results of this self-assessment indicate that the ROP met its program goals and achieved its intended outcomes. The staff found the ROP objective to be risk informed, understandable, and predictable, and the ROP met the agency goals of ensuring safety, openness, and effectiveness, as listed in the NRC's Strategic Plan Fiscal Years 2008–2013. The NRC staff maintained its focus on stakeholder involvement and continued to improve various aspects of the ROP. The staff implemented several ROP improvements in calendar year 2008 to address issues raised by the Commission, recommended by independent reviews, and obtained from internal and external stakeholder feedback.

The NRC inspection and assessment program independently verified that nuclear power plants were operated safely and securely. The staff revised the assessment program to incorporate lessons learned from the implementation of the safety culture enhancements and continued to ensure that the NRC staff and licensees acted as necessary to address identified performance issues. The staff continues to improve the performance indicator program to ensure that the performance indicators are meaningful inputs to the ROP. It actively solicits input from the NRC's internal and external stakeholders to further improve the ROP based on stakeholder feedback and lessons learned.

Integrated Materials Performance Evaluation Program Reviews of Selected NRC Regional Offices

The NRC, with the assistance of the Agreement States, completed eight Integrated Materials Performance Evaluation Program reviews to determine the adequacy and compatibility of the programs in evaluated Agreement States and one review for the materials licensing and inspection program and uranium recovery inspection program in NRC Region IV. Region IV was found satisfactory (the highest level) for all areas of the review, and there were no recommendations for the region.

Fuel Cycle Licensing and Inspection Program

The NRC's Fuel Cycle Licensing and Inspection Program is the agency's program to regulate the nation's non-defense related fuel fabrication facilities. Its licensing program is designed to issue licenses to facilities to receive title to, own, acquire, deliver, receive, possess, use, and transfer special nuclear material (SNM). Further, this program is necessary to verify that companies can safely use SNM prior to taking possession and starting operations. The inspection program's purpose is to obtain objective information that will permit the NRC to assess whether licensees operate licensed fuel cycle facilities

safely and in compliance with regulations, and that licensee activities do not pose undue safety and safeguards risks. This inspection program needs to be performed routinely since companies continue to make changes to facilities, staff, and operations.

The contract was awarded in September 2009. A kickoff meeting was conducted with the contractor on October 20, 2009.

The objective of this contract is to obtain expert analysis from a qualified entity who is familiar with the PART review process to assist NRC staff by performing a program assessment and gap analysis, and by developing recommendations to strengthen program performance.

Data Sources and Quality

The NRC's data collection and analysis methods are driven largely by its regulatory mandate. Specifically, the NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment. In undertaking this mission, the NRC oversees nuclear power plants, nonpower reactors, nuclear fuel facilities, interim spent fuel storage, radioactive material transportation, disposal of nuclear waste, and the industrial and medical uses of nuclear materials. Section 208 of the Energy Reorganization Act of 1974, as amended, requires the NRC to inform Congress of incidents or events that the Commission determines to be significant from the standpoint of public health and safety. The NRC developed the abnormal occurrence criteria to comply with the legislative intent of the Energy Reorganization Act to determine which events should be considered significant. Based on those criteria, the NRC prepares an annual "Report to Congress on Abnormal Occurrences" (NUREG-0090, Volume 31), which is available on the agency's public Web site at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0090>.

One important characteristic of this report is that the data presented normally originate from external sources such as Agreement States and NRC licensees. The NRC finds these data credible because: (1) agency regulations require Agreement States, licensees, and other external sources to report the necessary information; (2) the NRC maintains an aggressive inspection program that, among other activities, includes auditing licensee programs and evaluating Agreement State programs to ensure that they are reporting the necessary information as required by the agency's regulations; and (3) the agency has established procedures for inspecting and evaluating licensees. The NRC employs multiple database systems to support this process, including the Licensee Event Report Search System, the Accident Sequence Precursor Database, the Nuclear Materials Events Database, and the Radiation Exposure Information Report System. In addition, nonsensitive reports submitted by Agreement States and NRC licensees are available to the public through the NRC's ADAMS, accessible through the agency's public Web site at <http://www.nrc.gov/reading-rm/adams.html>.

As stated above, the NRC has established procedures for the systematic review and evaluation of events reported by both NRC and Agreement State licensees. The NRC's objective is to identify events that are significant from the standpoint of public health and safety based on criteria that include specific thresholds. The NRC verifies the reliability and technical accuracy of event information reported to the agency. The NRC periodically inspects licensees and reviews Agreement State programs. In addition, NRC Headquarters, the regional offices, and Agreement States hold periodic conference calls to discuss event information. Events identified as meeting the abnormal occurrence criteria are validated and verified before being reported to Congress.

Information Security

The agency's information security (IS) program: (1) protects NRC and licensee information and information systems from unauthorized access, use,

disclosure, disruption, modification, or destruction; (2) protects electronic control functions from unauthorized access or manipulation; and (3) ensures that adequate controls for protecting security-related information are used in the conduct of NRC business, both internal and external to the agency. The NRC information security program includes measures to accomplish the following:

1. Ensure that IS requirements, standards, and guidance are clear, concise, appropriate, and able to mitigate potential adverse effects if sensitive information is compromised.
2. Ensure that security controls for information owned by, or under the control of the NRC, are consistent with established IS controls; that security controls for information are operating as intended and that they are having the desired impact; and that similar controls for licensees regulated by the NRC are in compliance with NRC IS regulations.
3. Ensure that the NRC evaluate suspected or actual IS violations and consider appropriate sanctions.
4. Ensure that the NRC has made sufficient preparations for IS-related emergencies and incidents.
5. Ensure internal IS program components complement each other and are periodically evaluated and improved.

Performance Data Completeness and Reliability

In order to manage for results, it is essential for the NRC to assess the completeness and reliability of NRC performance data. Comparisons of actual performance with the projected levels are possible only if the data used to measure performance are complete and reliable. Consequently, the Reports Consolidation Act of 2000 requires the Chairman of the NRC to assess the completeness and reliability of the performance data used in the Report to Congress. The process for ensuring that the data are complete and reliable requires offices to complete a template for submission

to the Chief Financial Officer for every performance measure certifying that the applicable Office Director has approved the data submitted.

Data Completeness

The NRC considers data to be complete if the agency reports actual performance data for every performance goal and indicator in the annual plan. Actual performance data include preliminary data if those are the only data available when the agency sends its report to the President and Congress. The NRC has reported actual or preliminary data for every strategic

and performance goal measure; consequently, the data presented in this report meet these requirements for data completeness.

Data Reliability

The NRC considers data to be reliable when agency managers and decision makers use the data in carrying out their regulatory responsibilities. The data presented in this report meet this requirement for data reliability because NRC managers and senior leaders regularly use the reported data in the course of their duties.



Annual NRC-sponsored Regulatory Information Conference (RIC) held March 10-12, 2009, in Bethesda, MD.

Photo Courtesy of NRC Photo Library



Photo Courtesy of Elekta

The Gamma Knife utilizes a technique called stereotactic radiosurgery, which uses multiple beams of radiation converging in three dimensions to focus precisely on a small volume, such as a tumor, permitting intense doses of radiation to be delivered to that volume safely.



Photo Courtesy of NRC Photo Library

NRC Region IV inspector Bob Evans performing an inspection at Salmon River Uranium Development Corp., an abandoned mill located near North Fork, ID.