

1998

Annual Report

United States

Nuclear Regulatory Commission



July 30, 1999

The President
The White House
Washington, DC 20500



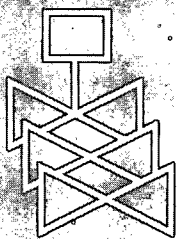
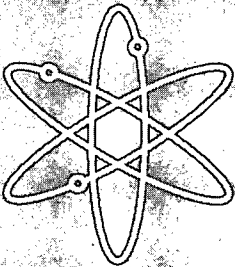
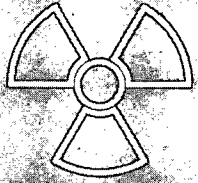
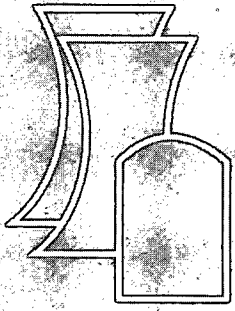
Dear Mr. President:

This Annual Report for 1998 of the United States Nuclear Regulatory Commission is enclosed for your transmittal to the Congress, as required by Section 307(c) of the Energy Reorganization Act of 1974.

The report discusses activities pursued in Fiscal Year 1998 in support of the agency's goals to ensure no undue risk to public health and safety from licensed uses of nuclear materials and facilities.

Respectfully,

Greta Joy Dicus
Greta Joy Dicus
Chairman



1998

Annual Report

*United States
Nuclear Regulatory Commission*



PREVIOUS REPORTS IN THIS SERIES

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NUREG-1145, Vol. 2, *1985 NRC Annual Report*, published June 1986
NUREG-1145, Vol. 3, *1986 NRC Annual Report*, published June 1987
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NUREG-1145, Vol. 5, *1988 NRC Annual Report*, published July 1989
NUREG-1145, Vol. 6, *1989 NRC Annual Report*, published July 1990
NUREG-1145, Vol. 7, *1990 NRC Annual Report*, published July 1991
NUREG-1145, Vol. 8, *1991 NRC Annual Report*, published July 1992
NUREG-1145, Vol. 9, *1992 NRC Annual Report*, published July 1993
NUREG-1145, Vol. 10, *1993 NRC Annual Report*, published August 1994
NUREG-1145, Vol. 11, *1994 NRC Annual Report*, published June 1995
NUREG-1145, Vol. 12, *1995 NRC Annual Report*, published August 1996
NUREG-1145, Vol. 13, *1996 NRC Annual Report*, published September 1997
NUREG-1145, Vol. 14, *1997 NRC Annual Report*, published December 1998

The *1998 NRC Annual Report*, NUREG-1145, Vol. 15, is available from
U.S. Government Printing Office
P.O. Box 37082
Washington, D.C. 20402-9328

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Highlights

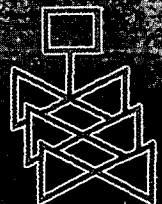
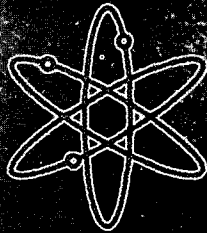
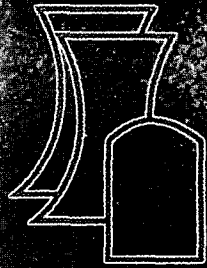
Highlights

This 24th annual report of the U.S. Nuclear Regulatory Commission (NRC) for Fiscal Year (FY) 1998—October 1, 1997, through September 30, 1998—discusses regulatory activities that support NRC's performance goals and movement toward risk-informed, performance-based regulation of nuclear materials and facilities. Additionally, the report includes organizational changes and major support services for achieving NRC's overall regulatory mission. NRC regulates the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment.

Its mission and purposes are defined by the *Energy Reorganization Act of 1974*, as amended, and the *Atomic Energy Act of 1954*, as amended, which provide the foundation for regulating the Nation's civilian uses of nuclear materials. In accordance with the 1974 Act, the President appoints five Commissioners, by and with the advice and consent of the Senate, and designates the Chairman of the Commission from among these Commissioners.

The NRC carries out its mission through a licensing, certification, and regulatory system comprising the following activities:

- licensing the design, construction, operation, and decommissioning of nuclear reactors and other nuclear facilities (such as nuclear fuel cycle facilities, uranium enrichment facilities, and test and research reactors);
- licensing the possession, use, processing, handling, and exporting of nuclear materials;
- licensing the siting, design, construction, operation, and closure of low-level radioactive waste disposal sites under NRC jurisdiction and the construction, operation, and closure of geologic repositories for high-level radioactive waste;
- licensing the operators of civilian nuclear reactors;
- inspecting licensed and certified facilities and activities;
- certifying privatized uranium enrichment facilities;
- conducting research on light-water reactor safety to gain independent expertise and information for making timely regulatory judgments and for anticipating problems of potential safety significance;
- developing and implementing rules and regulations that govern licensed nuclear activities;



- investigating nuclear incidents and allegations concerning any matter regulated by the NRC;
- enforcing NRC regulations and the conditions of NRC licenses;
- conducting public hearings on matters of nuclear and radiological safety, environmental concern, common defense and security, and antitrust matters;
- developing effective working relationships with the States regarding reactor operations and the regulation of nuclear material;
- maintaining the NRC Incident Response Program, including the NRC Operations Center;
- collecting, analyzing, and disseminating information about the operational safety of commercial nuclear power reactors and certain nonreactor activities;

Several key executives were reassigned in FY 1998 or shortly thereafter. In the Commission Staff offices, Annette L. Vietti-Cook became Secretary of the Commission; Janice Dunn Lee became the Acting Director of the Office of International Programs; and G. Paul Bollwerk, III, became the Acting Chief Administrative Judge of the Atomic Safety and Licensing Board Panel. William D. Travers became the Executive Director for Operations, Frank J. Miraglia became the Deputy Executive Director for Regulatory Programs, and Malcolm R. Knapp became the Deputy Executive Director for Regulatory Effectiveness. In the staff offices, Michael L. Springer became the Director of the Office of Administration, Paul H. Lohaus became the Director of the Office of State Programs, and James E. Dyer became the Regional Administrator in Region III.

The NRC organization as of September 30, 1998, is shown in the Appendix to this report, and the NRC organization as of February 19, 1999, is shown in an addendum to this appendix.

CHANGES IN THE COMMISSION AND ORGANIZATION

As of September 30, 1998, Dr. Shirley Ann Jackson was Chairman of the Commission (her term expires June 30, 1999), and the Commissioners were Nils J. Diaz (his term expires June 30, 2001) and Edward McGaffigan (his term expires June 30, 2000). The two vacant Commissioner positions were filled shortly after the end of the fiscal year: Greta J. Dicus returned to the Commission on October 27, 1998 (her term expires June 30, 2003), and Jeffrey Merrifield was appointed to the Commission on October 23, 1998 (his term expires June 30, 2002).

On December 10, 1998, the Commission approved the staff's plan to streamline the Office for Analysis and Evaluation of Operational Data by consolidating its functions in other program offices, primarily the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research.

FEES

The Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508), as amended, requires that in FY 1998, the NRC collect fees (under 10 CFR Part 170) and annual fees (under 10 CFR Part 171) that approximate 100 percent of the agency's budget authority, less the amount appropriated to the NRC from the Nuclear Waste Fund. Public Law 105-62 appropriated \$472.8 million to the NRC for FY 1998. Of the funds appropriated to the NRC, \$15 million was derived from the Nuclear Waste Fund and \$3 million was appropriated for regulatory reviews and other assistance provided to the Department of Energy and other Federal agencies; both of which are excluded from license fee revenues. In FY 1998, the total amount collected through fees and other charges was \$458.9 million. Of this total, \$454.8 million offsets the appropriation, bringing the net appropriation for FY 1998 to \$18 million. The remaining \$4.1 million will be used to reduce the total fees assessed in FY 1999.

PROGRAM HIGHLIGHTS

Nuclear Reactor Safety

In FY 1998, the NRC continued to monitor significant safety and regulatory issues at 103 commercial nuclear power reactors that are licensed to operate and at another 18 that are undergoing decommissioning.

Allegations. In FY 1998, the NRC received 1,026 allegations, comprising 2,222 individual concerns. Of the 1,026 allegations, 693 involved reactor issues, 244 involved materials issues, 69 involved Agreement State issues, and 20 involved other non-NRC issues.

Indemnity. Regarding insurance for nuclear power plants, the 16th annual property insurance reports submitted by power reactor licensees indicated that of the 68 sites insured, 53 are covered for at least the \$1.06 billion as required under our regulations. The remaining 15 sites have sought or have been granted exemptions from the full amount of required coverage.

Stakeholder Involvement. In FY 1998, the number of public meetings and stakeholder involvement in NRC initiatives substantially increased. For example, the Commission held specific meetings with stakeholders: more than 14 meetings were held with stakeholders on improvements to the regulatory oversight program; five meetings were held in the second half of FY 1998 on licensing process improvements, and numerous public meetings and workshops were held in all program areas. These activities complement the agency-wide plain language initiative.

Reducing Licensee Burden. One initiative to reduce licensee burden in FY 1998 was the continuation of the Improved Standard Technical Specifications (ISTS) program. Applications to convert to ISTS have been received for 57 units. Of these, 43 have been approved. The staff has seen a 32-percent reduction in the number of license amendments per unit for plants that have converted to ISTS.

Process Improvements. NRC achieved the goals of standardization and a more stable and predictable licensing process through certification of two next-generation reactor designs (Advanced Boiling Water Reactor and System 80+) and issuance of final design approval for the AP600 design.

In addition, during FY 1998, NRC initiated steps to streamline the license renewal process. As a result of these ongoing efforts, the NRC estimates that the license renewal process can be completed in 26 months instead of the previously estimated period of 5 years.

Licensing Action Inventory. For FY 1998, the licensing action inventory decreased about 11 percent and the median age of the inventory is down from 7.6 months to 7.1 months. Continued efficiency gains are expected as the NRC works with an outside consultant and stakeholders on licensing action process improvements.

Nuclear Materials Safety

Nuclear materials safety activities included licensing, certification, inspection, and other regulatory actions concerned with production and use of reactor-produced radioisotopes (byproduct material). Nuclear materials regulation during FY 1998 comprised—

- 3,437 licensing actions. Of this total, 277 were for new licenses, 2,940 were for amendments, 67 were for license renewals, and 153 were sealed source and device reviews;
- 1,884 materials licensee inspections;
- 10 reviews and 1 follow-up review of Agreement State programs and 2 regional integrated program reviews;
- 101 licensing and certification actions (e.g., new, amended, and renewed licenses or certificates) for enrichment, fuel fabrication, conversion, and other fuel cycle facilities; and
- 191 fuel cycle facility licensee and certificate holder inspections.

Assistance to Agreement States. To assist the States in administration of materials licensees, the

NRC sponsored 34 training courses and workshops attended by 357 State radiation control personnel during the fiscal year.

Strategic and Special Nuclear Material (S&SNM). In carrying out its mandate to regulate S&SNM in FY 1998, the NRC completed 60 safety-related source and S&SNM license or certificate amendments, 37 S&SNM technical reviews, and 4 S&SNM license renewals. The NRC staff performed 134 inspections at eight fuel cycle facilities and 57 inspections at the two gaseous diffusion plants. The NRC renewed three SNM licenses that included specific review of the criticality safety function and 10 nuclear criticality safety-related license or certificate amendments. Using a risk-informed and performance-based approach, NRC inspection staff confirmed that criticality safety was adequate at each fuel licensee and gaseous diffusion plant.

Nuclear Waste Safety

Licensing and Inspection Activities. The NRC received 36 applications for spent fuel storage and transportation package designs and facilities and completed 35 of these applications in FY 1998, including an independent spent fuel storage installation license for the North Anna Nuclear Station. Separately, the staff completed its technical review for the Holtec HI-STAR storage cask and approved the MP-187 transportation package. The NRC also received 103 applications for transportation package designs for other radioactive materials and completed the review and approval of 96 applications in FY 1998. The NRC has approved 13 designs for spent fuel storage under the use of either a general license or as part of a site-specific license, and it has certified two cask designs for the transport of spent nuclear fuel. Finally, the inspection staff completed 18 inspections and 60 reviews related to quality assurance, a number of which resulted in significant inspection findings.

Pilot Program Regarding U.S. Department of Energy (DOE) Nuclear Facilities. In FY 1998, the NRC and the DOE jointly conducted a pilot program to provide DOE and NRC information

for determining the desirability of NRC's regulatory oversight of DOE nuclear facilities and to support a decision on whether to seek legislation to authorize NRC regulation of DOE nuclear facilities.

The NRC conducted three pilot projects in FY 1998 for the following facilities:

1. Lawrence Berkeley National Laboratory;
2. Radiochemical Engineering Development Center at the Oak Ridge National Laboratory; and
3. Receiving Basin for Offsite Fuel at the Savannah River Site.

In general, NRC found that under the existing regulatory framework, NRC could resolve most of the technical, policy, and regulatory issues that the NRC staff encountered and that precedent for resolving many of these issues was in existing NRC policy and practice.

Communicating With Stakeholders

Improving Communication With the Public. In the spring of 1998, the staff presented the Commission with an extensive report containing more than 40 recommendations aimed at improving the quality, clarity, and credibility of the agency's communications with all those interested in the safety oversight of nuclear power, and, particularly, with members of the general public. One recent publication that points interested persons to NRC information is the "Citizen's Guide to U.S. Nuclear Regulatory Commission Information" (NUREG/BR-0010, Rev. 3), published in December 1998. It describes various types of NRC information and how to obtain it.

In the fall of 1998, the NRC submitted the Plain Language Action Plan in response to President Clinton's direction to all Federal Agencies about participating in the Plain Language Initiative. Implementing this plan will further our earlier efforts to improve agency communications with its stakeholders.

The Office of Public Affairs established a special Internet Web page entitled “NRC’s Changing Regulatory Environment” to keep stakeholders and the general public informed of steps being taken to improve the NRC’s regulatory performance. The Internet address for this page is <<http://www.nrc.gov/OPA/changes.htm>>. This page discusses meetings that the NRC has held to involve its stakeholders in the changes to its regulatory environment and its efforts to clearly communicate proposed changes to the regulatory process through its Plain Language Initiative. As an example, the NRC recently published “New NRC Reactor Inspection and Oversight Program” (NUREG-1649), an easy-to-read description of how NRC is revamping this program.

Communicating With the Media. To reach the media, the NRC held a two-day workshop for reporters that covered current issues facing nuclear utilities across the nation in April 1998 in addition to electronically providing press releases and speeches of senior officials to about 1,000 subscribers worldwide free of charge.

Each of the NRC’s four Regional Administrators conducted periodic news briefings during the year. Sessions were held at the Salem plant in New Jersey, the D.C. Cook plant in Michigan, and the Quad Cities plant in Illinois. Other sessions were held in Stuart and Miami, Florida; Atlanta, Georgia; and Erwin, Tennessee.

Adjudicatory Proceedings

As part of its broad initiative to increase effectiveness of the NRC’s programs and processes, the Commission on July 28, 1998, issued a policy statement entitled “Policy on Conduct of Adjudicatory Proceedings.” 63 FR 41872 (August 31, 1998). This statement critically reassessed the NRC’s practices and procedures for conducting adjudicatory proceedings under the existing Rules of Practice in 10 CFR Part 2, primarily subpart G, and set out certain measures hearing boards and presiding officers should employ to ensure efficient conduct of proceedings.

The Atomic Safety and Licensing Board. The Panel’s FY 1998 caseload followed a trend, begun in the late 1980s, of a docket primarily consisting

of enforcement cases, materials licensing cases, and reactor license amendment cases. It was reflective of the regulation of a maturing industry, and differed significantly from the Panel caseload in previous decades, which consisted mainly of construction permit and operating license cases for licensing new reactors.

SUPPORT SERVICES

Personnel, Training, and Employee Assistance Programs

During FY 1998, the NRC expended a total of 2,949 staff-years in carrying out its mission. Total staff-years included permanent full-time staff, permanent part-time staff, temporary employees, and consultants. The NRC hired 116 permanent full-time employees and lost 176 permanent full-time employees, the latter figure representing an attrition rate of 6.11 percent.

As part of the training program, the NRC developed a new acquisition curriculum to teach Acquisition for Project Managers and for Supervisors of Project Managers. Comprising 11 workshops, this curriculum focuses on procurement reforms resulting from the Federal Acquisition Streamlining Act and the Federal Acquisition Reform Act.

During FY 1998, the Employee Assistance Program (EAP) continued to give individual counseling and referral assistance to NRC personnel with such problems as chemical dependency, job stress, chronic illness, sexual harassment, and family issues. Employee visits to the health center average 30 per day. The NRC continued offering a variety of health and fitness programs in its fitness center located in Two White Flint North. About 500 NRC employees participated in these programs offered by professionally trained exercise physiologists and health professionals.

Managing Diversity

The managing diversity process is a long-term initiative designed to create and maintain an

environment in which every employee is valued and works cooperatively to do his or her best work. During FY 1998, three sessions of the Managing Diversity Leadership Seminars were held for headquarters managers and supervisors and one session in each of the agency's four regional offices. To enhance information sharing with the small business community, the office initiated a series of small business forums that are conducted quarterly and installed a toll-free, 24-hour voice mail system that has fax-on-demand capability.

Information Management

NRC's World Wide Web Site. Posting material to NRC's World Wide Web site resulted in savings. For example, incorporating the information previously available at the Fedworld Web site, which had been maintained for NRC by the National Technical Information System, saved an annual cost of \$176,000. The agency also improved access to the information by restructuring the indices by topic. In addition, posting agency announcements to NRC's internal Web site for staff use saved 3400 reams of paper and \$103,500 annually. The NRC Web site receives an average of 75,000 hits a day. A hit is equivalent to accessing a single page or graphic.

Publications. In FY 1998, the OCIO issued 283 NUREG-series publications, many of which are cited in this report. Sixty percent of these were

written by the staff. Some of them are posted to the NRC's WWW site.

Administrative Services

Property Management Program. Executive Order 12999, "Improving Mathematics and Science Education in Support of National Education Goals," directs Federal agencies to the maximum extent possible to identify and transfer excess education-related equipment to elementary and secondary schools. Under these guidelines, the NRC established a program for donating used and obsolescent computer equipment to school systems nationwide. In FY 1998, the NRC donated more than 1,241 pieces of computer equipment, including color monitors, system units, and printers.

Contract Management. Effective implementation of procurement reforms resulted in timely contract awards for obligations totaling \$73 million. The agency also processed 5,093 purchase-card transactions totaling \$2.7 million for an estimated savings of \$255,000 during FY 1998. Implementation of a new contract information system has facilitated availability of procurement data to staff and managers and has improved the accuracy of the data. NRC continued to conduct reviews of DOE laboratory agreements to ensure effective oversight for placement and monitoring of the agency's work performed under such agreements.

Nuclear Reactor Safety

The strategic goal for nuclear reactor safety is to prevent radiation-related deaths and illnesses and protect the environment in the use of civilian nuclear reactors. In Fiscal Year (FY) 1998, the U.S. Nuclear Regulatory Commission (NRC) met the associated performance goals and had (1) no civilian nuclear reactor accidents; (2) no deaths resulting from radiation or radioactivity releases from civilian nuclear reactors; (3) no substantiated breakdown of physical protection that significantly weakens protection against radiological sabotage or theft or diversion of special nuclear materials; and (4) no offsite releases of radioactive material from civilian nuclear reactors that have the potential to cause a serious adverse impact on the environment. Data for the fifth goal, environmental impacts, are considered through the *National Environmental Policy Act* (NEPA) process before regulatory action is taken and will be available for FY 1999.

The primary mission of the NRC as it pertains to the Nuclear Reactor Safety Arena is to ensure that its licensees safely design, construct, and operate civilian nuclear reactor facilities, as well as nonpower reactors. The NRC mission is accomplished through reactor licensing, inspection, performance assessment, identification and resolution of safety issues, reactor regulatory research, regulation development, independent assessment of reactor operational events and experience, investigations of alleged wrongdoing by licensees, applicants, contractors or vendors, and imposition of enforcement sanctions for violations of NRC requirements.

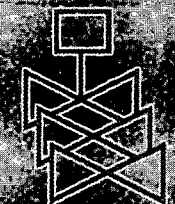
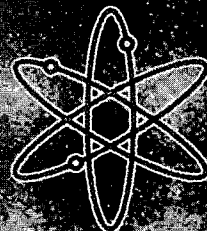
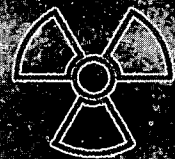
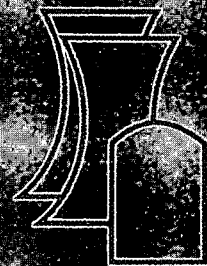
Activities of the NRC staff during FY 1998 focused on four outcomes:

1. maintaining safety;
2. reducing unnecessary licensee burden;
3. increasing public responsiveness and communication; and
4. increasing the effectiveness and efficiency of key processes.

Specific activities contributing to attainment of these outcomes in FY 1998 are discussed in this section.

MAINTAINING SAFETY

The Office of Nuclear Reactor Regulation (NRR) is responsible for ensuring the public health and safety through licensing and inspection activities at all nuclear power reactor facilities in the United States. It is responsible for the oversight of all aspects of licensing and inspection of



manufacturing, production, and utilization facilities (except for facilities reprocessing fuel and performing isotropic fuel enrichment), and receipt, possession, and ownership of source, byproduct, and special nuclear material used or produced at facilities licensed under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, the NRR staff develops policy and inspection guidance for programs assigned to the regional offices and assesses the effectiveness and uniformity of the region's implementation of those programs. The staff also identifies, and in coordination with the regional offices, takes action regarding conditions and licensee performance at such facilities that may adversely affect public health and safety, the environment, or the safeguarding of nuclear facilities. It assesses and recommends or takes action in response to incidents or accidents.

The NRC is responsible for licensing issues and regulatory policy concerning reactor operators, including the initial licensing examination and requalification examinations; emergency preparedness, including participation in emergency drills with Federal, State, and local agencies; radiation protection; security and safeguards at such facilities, including fitness for duty; and the inspection of nuclear component supplier facilities. Regulatory responsibilities for reactors include the technical review, certification, and licensing of advanced nuclear reactor facilities and the renewal of current power reactor operating licenses. The staff also exchanges safety and regulatory information with other nations having major nuclear power programs.

In FY 1998, the NRC continued to monitor significant safety and regulatory issues at 103 commercial nuclear power reactors that are licensed to operate and at another 18 that are undergoing decommissioning. Improving trends continued in that NRC tracked performance indicators and accident sequence precursors (Figures 1.1 and 1.2). For additional information about these figures, see "Analysis of Operational Data for Reactors" in this chapter.

Other noteworthy topics relating to the outcome of maintaining safety include the following areas.

Revisions to the Assessment and Oversight Process

The NRC initiated efforts to develop a new assessment and oversight process that focuses on regulated activities that pose the greatest risk to the public. This process is based on probabilistic risk assessment (PRA) concepts and other approaches to monitor and assess the performance of nuclear power plants. The NRC staff worked closely with the ACRS to develop guidance documents and pilot applications on the use of PRA in the regulatory process. The continued development of a new risk-informed oversight process will continue into FY 1999. Activities that occurred during FY 1998 were—

- Using a team of regional and headquarters experts, the NRC staff proposed a new assessment framework that builds upon the cornerstones of licensee performance that must be monitored to ensure that nuclear power reactor operations do not pose unacceptable risks to the public. As part of the assessment framework, the NRC staff has identified performance indicators, performance indicator thresholds, and risk-informed inspections that would supplement and verify the validity of the performance indicator data.
- Using a risk-informed approach, the NRC staff developed a proposed baseline inspection program that includes a comprehensive list of inspectable areas within each cornerstone of the assessment framework. A recent report, "New NRC Reactor Inspection and Oversight Program" (NUREG-1649), describes this program.
- A public comment period on the new oversight process was used to seek comment on improvements to the assessment, inspection, and enforcement processes.
- A workshop was held with the industry and the public to obtain and evaluate input on recommendations for improving the regulatory oversight process. Consensus was reached on the overall philosophy of the proposed process. The results of the workshop will be used as the foundation of the new oversight process during FY 1999.

Annual Industry Averages 1985 -1998

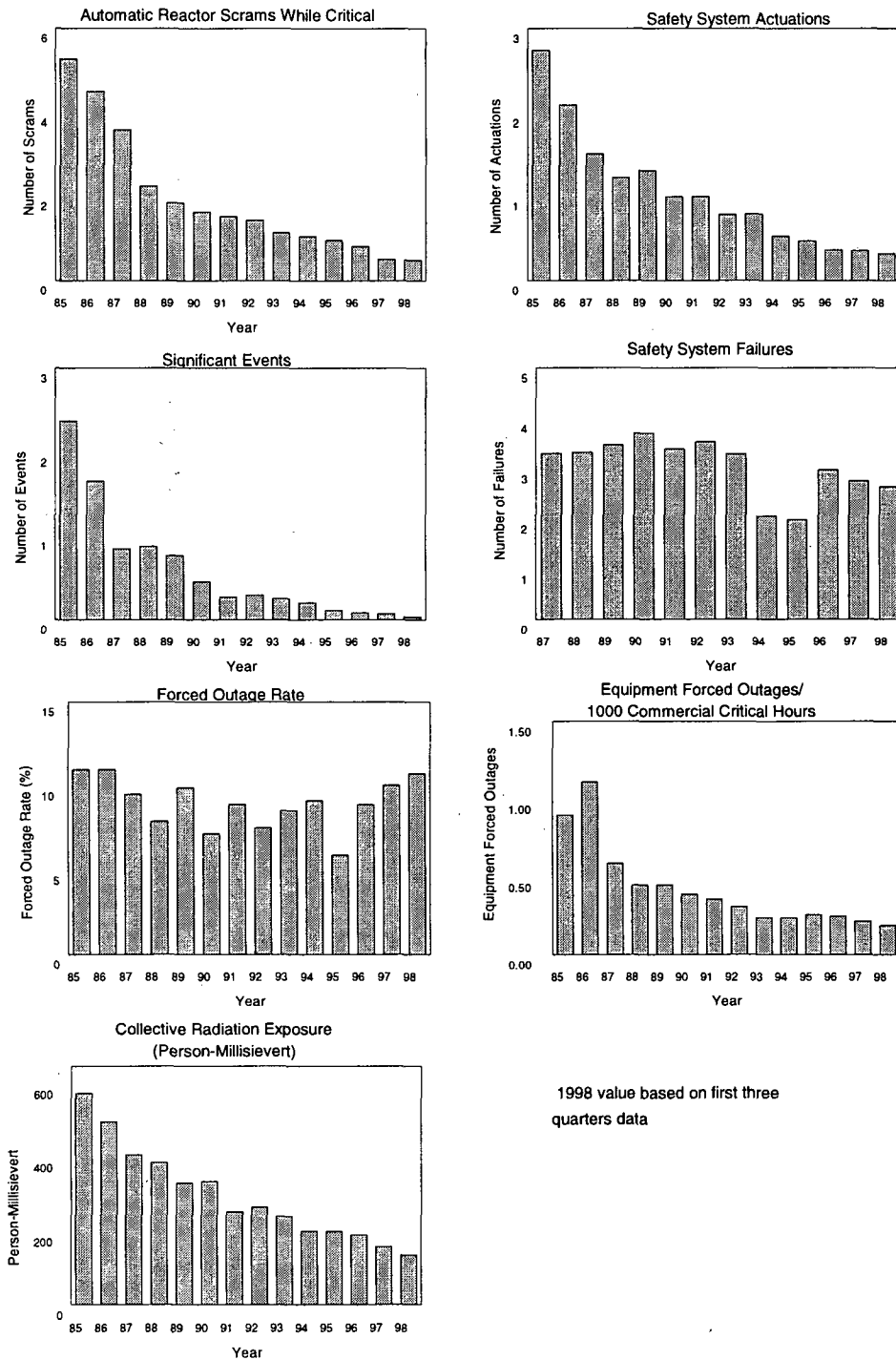


Figure 1.1 Performance Indicators—Annual Industry Averages

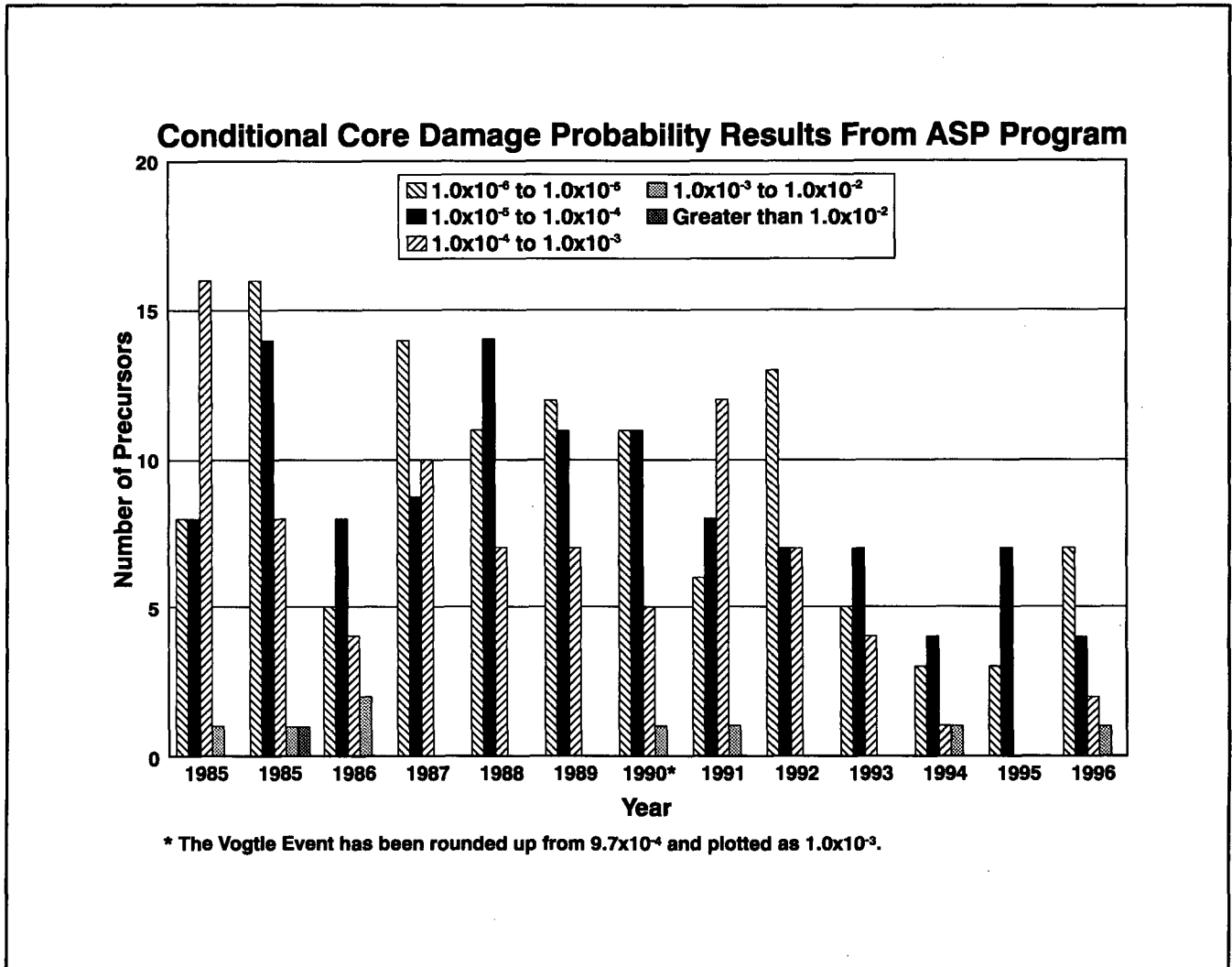


Figure 1.2 Distribution of ASP Conditional Core Damage Probabilities by Calendar Year

- The NRC suspended the Systematic Assessment of Licensee Performance (SALP) process so that resources could be focused on developing assessment process improvements.
- The Senior Management Meeting (SMM), which is a review and integration of the agency's observations and findings for nuclear reactors, was changed from a semiannual to an annual meeting. As a result of this meeting, the NRC staff worked closely with

the ACRS to formulate the new inspection and assessment process.

The NRC staff conducted a self-assessment of the way it reviews and evaluates events agencywide and developed recommendations from the analysis of this self-assessment. The results were documented in a report that was completed in December 1998 and transmitted to the Commission in a paper identified as SECY 99-005 (see Chapter 5, "Communicating With NRC Stakeholders," in this report for information about Commission Papers with these designators).

Year 2000 Problem in Nuclear Power Plants

In FY 1998, the NRC continued its oversight of nuclear power plant licensee efforts to address the Year 2000 (Y2K) problem. As a result of interactions between the NRC staff and the Nuclear Energy Institute (NEI) on the Y2K problem, NEI issued "Nuclear Utility Year 2000 Readiness" (NEI/NUSMG 97-07), dated October 1997, which provided guidance to nuclear power plant licensees on implementation of a program to address the Y2K problem at their facilities. In May 1998, the NRC issued Generic Letter 98-01, "Year 2000 Readiness of Computer Systems at Nuclear Power Plants," which requested licensees to confirm implementation of a Y2K readiness program consistent with the NRC accepted industry guidance document (NEI/NUSMG 97-07) and to confirm Y2K readiness of their facilities by July 1, 1999, or to provide a status and schedule of work remaining to achieve readiness. In August 1998, all licensees confirmed implementation of a Y2K readiness program consistent with the NEI/NUSMG 97-07 guidance. In September 1998, the NRC began to conduct 12 sample audits of licensee Y2K readiness programs in order to verify the effectiveness of licensee efforts. In mid-CY 1999, the NRC plans to review the Y2K readiness program activities and contingency planning development at all 103 operating nuclear power plants. The audits will continue into the early part of CY 1999.

Making 10 CFR Part 50 Risk-Informed

The staff began work on a proposed plan for the Commission that discusses approaches to modifying the regulations in 10 CFR Part 50 to make them risk-informed. This initiative is intended to contribute to maintaining safety by focusing NRC and licensee resources on those areas of greatest risk significance. The plan will identify related policy issues for Commission consideration. Among other things, it will propose the development of risk-informed definitions for safety-related and safety-important structures,

systems, and components and the evaluation of potential changes to the body of Part 50 regulations that would incorporate risk-informed attributes (e.g., deleting unnecessary or ineffective regulations and including provisions for risk-informed alternatives to present requirements). This is a natural continuation of recently completed work on the development of risk-informed regulatory guides (RGs) and the standard review plan (SRP) chapters. Together, these documents will serve to establish a risk-informed regulatory infrastructure by providing criteria for NRC to use in evaluating applications referencing risk insights. They will be a key ingredient in attaining the goal of the NRC's strategic plan for nuclear reactor safety.

Allegations

In FY 1998, the NRC received 1,026 allegations, comprising 2,222 individual concerns. Of the 1,026 allegations, 693 involved reactor issues, 244 involved materials issues, 69 involved Agreement State issues, and 20 involved other non-NRC issues. Of the 1,026 allegations received, 201 were purported to involve wrongdoing and 118 stated that someone had been discriminated against for raising a safety or regulatory concern. In the same time frame, the NRC completed action on 1,264 allegations, comprising 3,087 individual concerns. In 35 percent of the allegations on which action was completed, the NRC was able to substantiate the validity of at least part of the concerns raised. The average time to complete the review of allegations was 117 days for allegations that did not involve wrongdoing and 354 days for allegations involving wrongdoing. This average is an improvement over the average time to complete reviews in FY 1997, 119 days and 371 days, respectively.

Indemnity, Financial Protection, and Property Insurance

As part of its responsibilities under the *Price-Anderson Act*, the NRC provides a summary to Congress of its key activities concerning

indemnity, financial protection, and property insurance. On September 17, 1998, the Commission forwarded to Congress, NUREG/CR-6617, a Congressionally mandated report on the status of the Price-Anderson system and conclusions and recommendations that should be considered if Congress decides to extend Price-Anderson beyond the current August 1, 2002, expiration date.

In addition, the 16th annual property insurance reports submitted by power reactor licensees indicated that of the 68 sites insured, 53 are covered for at least the \$1.06 billion as required under our regulations. The remaining 15 sites have sought or have been granted exemptions from the full amount of required coverage.

Finally, the private nuclear energy liability insurance pool, American Nuclear Insurers, paid policyholders a 32nd annual refund of premium reserves under their Industry Credit Rating Plan. Under the plan, a portion of the annual premiums is set aside as a reserve available for refund to policyholders. The amount of the reserve available for refund is determined on the basis of the loss experienced by all policyholders over the preceding 10-year period. Refunds paid in 1998 (for the period from 1988 through 1998); totaled \$32,057,988, which is approximately 43.6 percent of all premiums paid on the nuclear liability insurance policies issued in 1988. The refunds represent about 75.1 percent of the premiums placed in reserve in 1988.

Other key ongoing activities with respect to maintaining safety include—

- continuing to implement revised inspection procedures to ensure design basis is appropriately captured at licensed reactor facilities;
- publishing a draft rule to require licensees to complete safety assessments before performing on-line maintenance, including during shutdown conditions;
- overseeing industry initiatives on several safety issues, including high pressure injection line cracking; guidelines for surveillance and maintenance of steam generators; and inspection and repair of BWR reactor vessel

internals, and part length control rod drive mechanisms;

- participating in bilateral exchanges of safety and regulatory information with nations having major nuclear power programs, which included France, Japan, the United Kingdom, Spain, Korea, Taiwan, and Canada. (See also Chapter 4, “International Nuclear Safety Support,” in this report.) The main technical topics included in these exchanges were safety performance of high burnup fuels, risk-informed regulation, advanced digital instrumentation and control (I&C) systems, and recent events of regulatory significance. The NRC continued participation in a four-party working group (regulatory authorities of France, Canada, the United Kingdom, and the United States) to exchange information on digital I&C systems and was also involved in compilation of material from NRC publications for the U.S. national report for the International Convention on Nuclear Safety; and
- representing the United States on the Nuclear Energy Agency Committee on Nuclear Regulatory Activities (CNRA). The CNRA focused, during this year, on Review Procedures and Criteria for different Regulatory Applications of probabilistic safety assessment; Inspection Practices; Fuel Safety Margins, and, Future Regulatory Challenges. The NRC was also active in support of selected IAEA nuclear safety programs.

Incident Response Operations

The NRC conducts incident response activities to ensure that (1) it is prepared to carry out its role in a radiological emergency at NRC-licensed nuclear reactor and materials facilities, (2) licensee responses are consistent with licensee responsibilities, and (3) NRC responses are coordinated with other Federal response activities and State and local government activities. To ensure that a reliable and high-quality incident response program is maintained, the NRC—

- maintains and implements the NRC incident response program in preparation for actual operational events within the industry;

- operates the NRC Operations Center 24 hours a day with engineers and scientists capable of receiving event reports and recognizing and communicating problems and emergencies to managers;
- coordinates efforts to maintain the functionality of the Federal Radiological Emergency Response Plan, the Federal Response Plan, and agreements between the NRC and other State, Federal, and international organizations and countries on responses to nuclear events;
- conducts a State outreach program to improve the States' understanding of how the NRC, as the Lead Federal Agency, will coordinate the Federal response to a severe accident at a nuclear facility; and
- maintains the NRC Operations Center and regional functional procedures, response tools, and training.

The NRC is prepared to respond to an event at all times by continually staffing the NRC Operations Center with highly qualified Operations Officers, by having an adequately staffed and trained incident response organization, and by having an NRC Operations Center and an emergency telecommunications system that are available under all circumstances. Upon notification of an emergency, the NRC promptly determines the appropriate response, rapidly staffs the NRC Operations Center with an appropriate complement of responders, and conducts an independent assessment of plant conditions and protective action recommendations for both licensee personnel and the public.

In the event of an emergency at an NRC-licensed facility (or associated with an NRC-licensed activity), the licensee places an emergency telephone call to the NRC Operations Center immediately after notifying appropriate State and local agencies. The NRC's response to an event may range from routine followup to a complete activation of both the regional Incident Response Center and the NRC Operations Center located in headquarters. The NRC utilizes the following formal modes for responding to events at its licensed facilities: Normal, Standby, Initial Activation, and Expanded Activation.

During FY 1998, the NRC entered the Standby Mode and Monitoring Phase of Normal Mode for the Davis Besse loss-of-offsite-power Alert caused by a tornado. The Monitoring Phase of Normal Mode was also entered for one Alert, four Unusual Events, and one non-emergency event as well as in anticipation of the potential onset of two hurricanes. Tables 1.1 and 1.2 summarize the NRC's responses to both event notifications and other non-reportable events during FY 1998.

Two events in Table 1.1, Washington Nuclear 2 and Davis Besse 1, reached the threshold for evaluation by the Accident Sequence Precursor (ASP) Program. The Washington Nuclear 2 event has been preliminarily classified as an "interesting event," with a conditional core damage probability (CCDP) not greater than $1E-06$. The Davis Besse 1 event has been preliminarily classified as a precursor event with a CCDP of approximately $4E-4$. While the implication for risk evaluation is still being assessed, there is no significance from either of the events relative to the overall impact on the public health and safety. The other events described in Tables 1.1 and 1.2 were judged to be of lesser risk significance.

In addition to emergency event notifications, the NRC Operations Center receives notifications of events that do not meet the threshold for emergency classification under licensee emergency response plans. The Operations Center received reports of 1,836 events during FY 1998, including 24 Unusual Events and 8 Alerts. (This data excludes emergency event report retractions. One Alert and four Unusual Event notifications were retracted by licensees following event evaluation and response.) The events reported to the NRC Operations Center during FY 1998 are summarized in Tables 1.3 and 1.4.

Augmented Inspection Team Response. On June 17, 1998, owing to various equipment deficiencies and maintenance errors, a rupture occurred in the firemain system at Washington Nuclear Power Plant, Unit 2. The unit was in cold shutdown and preparations were underway for a plant startup. The rupture of the firemain system caused flooding that entered safety-related equipment rooms and completely submerged one equipment room and rose to excessive levels in an adjacent room via a failed drain sump cross-connect valve. To isolate the flooding, plant operators secured

Table 1.1 Agency Responses to Event Notifications during Fiscal Year 1998

Facility	Emergency Classification, Event Date, and Description of Event	NRC Response Mode
Moses Cone Health Systems	NON-EMERGENCY – 03/04/98 – North Carolina Division of Radiation Protection report regarding 19 Cesium-137 brachytherapy sources ranging from 12 to 60 millicuries missing from a hospital located in the Greensboro area	Monitoring Phase of Normal
Limerick 1 (GE/BWR-4)	ALERT – 04/17/98 – Strong odor of either propane or acetylene in the Unit 1 turbine condenser area	Monitoring Phase of Normal
Washington Nuclear 2 (GE/BWR-5)	UNUSUAL EVENT – 06/17/98 – Flooding of two emergency core cooling system pump rooms due to a broken fire header line	Monitoring Phase of Normal
Davis Besse 1 (B&W-R-LP/PWR)	ALERT/UNUSUAL EVENT – 06/24/98 – Tornado damage in the electrical switchyard, cooling tower, and turbine building and resulting in a turbine trip/reactor trip from 99% power due to a loss of offsite power	Standby and Monitoring Phase of Normal
Brunswick 1, 2 (GE/BWR-4)	UNUSUAL EVENT – 08/25/98 – Issuance of a Hurricane Warning due to the potential onset of Hurricane Bonnie	Monitoring Phase of Normal
Turkey Point 3, 4 (W/PWR-3)	UNUSUAL EVENT – 09/24/98 – Issuance of a Hurricane Warning due to the potential onset of Hurricane Georges	Monitoring Phase of Normal
Waterford 3 (CE/PWR)	UNUSUAL EVENT – 09/26/98 – Issuance of a Hurricane Warning due to the potential onset of Hurricane Georges	Monitoring Phase of Normal

Table 1.2 Agency Responses to Non-Reportable Events during Fiscal Year 1998

Event Dates	Description of Event	Facilities Involved	NRC Response Mode
08/25-27/98	Anticipation of the potential onset of Hurricane Bonnie	General Electric Nuclear Energy Harris 1 *Brunswick 1, 2 Surry 1, 2	Monitoring Phase of Normal
09/25/98 09/27-28/98	Anticipation of the potential onset of Hurricane Georges	*Turkey Point 1, 2 *Waterford 3 River Bend 1 Grand Gulf 1 Farley 1, 2	Monitoring Phase of Normal
*Brunswick, Turkey Point, and Waterford made event notifications on these issues. (Refer to Table 1)			

Table 1.3 Events Reported to the NRC Operations Center during Fiscal Year 1998

Emergency Class	Power Reactor	Fuel Facility	Non-Power Reactor	Hospital	Well Logging/Transport/Materials	Other	Total
Non-Emergency	1,213	295	1	57	120	118	1,804
Unusual Event	24*	0	0	0	0	0	24*
Alert	4	4*	0	0	0	0	8*
Site Area Emergency	0	0	0	0	0	0	0
General Emergency	0	0	0	0	0	0	0
Total	1,241*	299*	1	57	120	118	1,836*

*Data excludes emergency event report retractions (One Alert and four Unusual Event notifications were retracted by licensees following event evaluation and response.)

Table 1.4 Classification of Events Under Licensee Emergency Plans from Calendar Year 1990 to Fiscal Year 1998

Emergency Class	CY90	CY91	CY92	CY93	CY94	CY95	FY96	FY97	FY98
Unusual Event	151	170	135	103	97	66*	67*	49*	24*
Alert	10	9	20	8	4	8	10	4	8*
Site Area Emergency	1	2	1	1	0	0	1	0	0
General Emergency	0	0	0	0	0	0	0	0	0
Total	162	181	156	112	101	74*	78*	53*	32*

*Data excludes emergency event report retractions (During fiscal year 1998, one Alert and four Unusual Event notifications were retracted by licensees following event evaluation and response.)

NOTE: Calendar year values are shown for 1990 through 1995, and fiscal year values are used from 1996 on. Data for October 1, 1995, through December 31, 1996, is included in both calendar year 1995 and fiscal year 1996.

the fire pumps, which impaired the normal fire suppression capability of the station. On the basis of these events, the plant operators declared a notification of unusual event and activated the plant emergency response organization.

An NRC augmented inspection team (AIT) was dispatched from Region IV and was on site from June 17 to 23, 1998. The results of the AIT were presented at a public exit meeting on site on July 8, 1998, and were documented in NRC

Inspection Report 50-397/98-16, which was issued on July 17, 1998. A Preliminary Notification of Occurrence PNO-IV-98-026, which described this event, was issued on June 18, 1998, updated on June 19, 1998, and updated again on June 23, 1998. Finally, NRC Information Notice 98-31 was issued on August 18, 1998, and provided further details related to the event.

REDUCING UNNECESSARY LICENSEE BURDEN

The NRC staff continued to pursue initiatives in FY 1998 that focused on the dual outcomes of maintaining safety while reducing unnecessary burden on its licensees. Initial feedback from reactor licensees indicated that NRC initiatives are starting to be effective in reducing unnecessary burden at reactor sites. Some of these activities are summarized in the following sections.

Issuance of Risk-Informed License Amendments

During FY 1998, the staff performed numerous risk-informed licensing reviews that resulted in the issuance of numerous license amendments. Many of these amendments modified technical specifications. The following are some examples of the results of licensing reviews:

- Amendments were issued extending the allowed outage times (AOTs) for (a) a single inoperable safety injection tank at San Onofre-2 and -3, Arkansas Nuclear One-2, and Millstone-2, and (b) a single inoperable emergency diesel generator at Fermi-2, Pilgrim, North Anna-1 and -2, and San Onofre-2 and -3.
- Approval of a Westinghouse proposal was given that could be used by licensees of Westinghouse plants of various vintage to allow their extension of the AOTs for a single inoperable accumulator.

- A confirmatory order was issued modifying post-TMI containment hydrogen monitor requirements for Arkansas Nuclear One-2.
- A pilot application of a risk-informed inservice testing program at Comanche Peak was completed.
- Pilot applications of risk-informed Inservice inspection programs were initiated at Vermont Yankee, Surry, and Arkansas Nuclear One-2.

Rulemaking on 10 CFR 50.59

During FY 1998, the NRC prepared proposed rulemaking for revisions to 10 CFR 50.59 and related requirements, concerning processes for control of changes made by licensees to their facilities without prior NRC approval. The purpose of the proposed rule is to provide clarity through definitions and, also, flexibility through revised criteria for when prior approval is needed. The staff paper was forwarded to the Commission on July 10, 1998 (SECY-98-171), and the Commission approved publication of a proposed rule for a 60-day comment period in a Staff Requirements Memorandum dated September 25, 1998. The proposed rule was published on October 21, 1998 (63 FR 56098).

Guidance for Updating Final Safety Analysis Reports

As a result of the lessons-learned from the Millstone Nuclear Power Plant experience and the discovery that updates to final safety analysis reports (FSARs) at a number of plants did not contain the types of information expected, the NRC determined that additional guidance was necessary. The staff developed a proposed generic letter, but its issuance was deferred pending resolution of differences between staff positions and those in a guidance document proposed by industry. During the summer of 1998, the staff and industry met several times to resolve the remaining issues. As of September 30, 1998, the staff was waiting for industry to submit its guidance document for formal endorsement in a

regulatory guide. FSAR guidance can be found at <<http://www.nrc.gov/OPA/gmo/tip/tip41.htm>>.

Other burden reduction initiatives pursued in FY 1998 include—

- continuation of the Improved Standard Technical Specifications (ISTS) program. Applications to convert to ISTS have been received for 57 units. Of these, 43 have been approved. The staff has seen a 32-percent reduction in the number of license amendments per unit for plants that have converted to ISTS.
- improvements to guidance in a range of areas such as enforcement where guidance was issued to clarify existing policy in handling of non-risk significant violations and Severity Level IV violations (see “Enforcement and Investigative Actions” in this chapter). In addition, concerns regarding compliance backfits as it relates to generic communications were addressed as well as actions to clarify guidance on the threshold for issuing a Confirmatory Action Letter (CAL) to licensees.
- rulemaking improvements, such as changes to regulations to eliminate requirements for licensees to periodically update to the latest endorsed edition and addenda of the American Society of Mechanical Engineers (ASME) code, response to an industry rulemaking petition concerning changes to licensee Quality Assurance Plans, and a rulemaking plan to allow credit for more accurate flow measurements in analyses for emergency core cooling system performance.

Reactor Pressure Vessels. During FY 1998 the NRC completed three major activities that have contributed to the relaxation of overly conservative criteria and that are contributing to the technical basis for a broad reassessment of the requirements for ensuring reactor pressure vessel (RPV) safety.

First, working with the ASME Working Group, the NRC undertook a reevaluation of the fracture

toughness bases for nuclear plant pressure temperature (P-T) limits. This work established the technical bases for changing the basic fracture toughness curves used in determining P-T curves and also provided a significant burden reduction for the majority of operating nuclear plants.

Second, the NRC published “Improved Embrittlement Correlations for Reactor Vessel Steels” (draft NUREG/CR-6551), which provides much of the technical basis for revising Regulatory Guide 1.99, Rev. 2, on Radiation Embrittlement. The industry is currently using the work described in the report as the basis for a revision to ASTM Standard E-900 on Radiation Embrittlement.

Third, the NRC completed detailed ultrasonic test (UT) examinations of welds removed from an RPV that had not seen service. The results of these examinations are being used to develop an accurate assessment of the flaw density and distribution for RPV welds that will be used in reevaluation of the bases for NRC’s Pressurized Thermal Shock screening criteria in 10 CFR 50.61.

Seismic Design of Piping. Several technical issues were raised about the seismic design codes for nuclear plant piping proposed in the Addenda of the ASME Boiler and Pressure Vessel Code. The proposed codes, if endorsed in the NRC regulations, could significantly reduce the safety margins for some piping designs if the codes are used for plant modifications as well as new designs. Because of these concerns, the NRC initiated a research program to assess the technical basis for the proposed new codes.

The research project confirmed that some provisions of the 1994 Addenda have inadequate technical bases and may not provide an adequate margin of safety. Specifically, both fatigue and collapse failure modes need to be considered in piping design, whereas the 1994 Addenda considered only the fatigue failure mode. More important, the work provided the NRC staff with the technical basis to define an adequate level of safety margins, based on risk-informed considerations, to calculate the design margin.

INCREASING PUBLIC RESPONSIVENESS AND COMMUNICATION

The final key outcome that was the NRC's staff focus in FY 1998 was increasing public confidence. Often, the specific activities affecting this outcome are intertwined in programs and initiatives reported in the other outcome areas. A sampling of some of the FY 1998 activities not previously mentioned are summarized below.

- In FY 1998, the number of public meetings and the stakeholder involvement in NRC initiatives substantially increased. For example, the Commission held specific meetings with stakeholders; over 14 meetings were held with stakeholders on improvements to the regulatory oversight program; five meetings were held in the second half of FY 1998 on licensing process improvements as well as numerous public meetings and workshops being held in all program areas (see Chapter 5, "Communicating With NRC Stakeholders," in this report).
- NRC sponsored its 10th annual Regulatory Information Conference (RIC). The RIC provides a communication forum for managers and staff of NRC and utilities to meet and enhance and promote a better understanding of industry and regulatory trends, processes, and initiatives for improving nuclear safety. The 1998 RIC was held April 14 and 15, 1998, at the Capital Hilton Hotel in Washington, D.C., and was attended by over 750 people from industry; other Federal, State, and local government agencies; and the general public.
- The priority of the review of petitions to modify, suspend, or revoke a license (2,206 petitions) was raised and the timeliness goal for completion of these reviews was emphasized.
- The increased use of the NRC web site as a means for dissemination of information was encouraged (see Chapter 6, "Support Services," in this report).

Regional Reactor Site Visits. In late 1997 through early 1998, the Senior Reactor Analysts (SRAs) conducted site interface visits with each facility in Region IV for the purpose of establishing technical contact with the licensee's risk organizations. These visits usually lasted two days, and the first day was devoted to technical discussions related to the status of the licensee's risk analysis. Discussions centered around the plant-specific risk profile as well as how the current profile may have changed from that submitted in the integrated plant evaluation (IPE) studies. During the second day, the SRAs, in conjunction with the plant staff, toured the plants for the purpose of gaining familiarity with the major risk significant equipment and operator actions at site. Whenever possible, the assigned resident staff participated in the visits. The visits included discussions with various plant organizations to gain an appreciation of how risk insights are being integrated into plant operations.

The visits yielded immediate short-term benefits. The SRAs were able to collect information that allowed the region to gain valuable insights in the following areas: outage plans, modification plans, significant on-line maintenance activities, risk-informed initiatives, and updated plant risk profile information. Additionally, the visits are expected to provide valuable long-term benefits in that new, formal lines of communication have been established with each licensee. These lines of communication are expected to enhance safety by exploiting a new resource of information that should provide a valuable risk perspective for important activities. As a followon to these visits, a counterpart workshop is scheduled in the regional office for July 20–21, 1999, to continue to develop the lines of communication that were established during the site visits and to provide a forum for discussion of current issues of interest.

INCREASING THE EFFECTIVENESS AND EFFICIENCY OF KEY PROCESSES

A continuing improvement outcome for the NRC staff is to increase the effectiveness and efficiency

of its key processes. Several areas and activities of focus during FY 1998 are described in the next four sections.

NRC/Industry Licensing Process Improvement Working Group

In July 1998, the staff conducted an NRC/NEI licensing interface meeting to discuss areas of stakeholder concern regarding the licensing process. Subsequently, the staff established an NRC working group to interface with an industry working group for the purpose of facilitating licensing process improvements. The staff also issued and conducted training on revised guidance (NRR Office Letter No. 803, Revision 2, "License Amendment Review Procedures") to address stakeholder concerns regarding requests for additional information and handling of regulatory commitments and performance goals. For FY 1998, the licensing action inventory decreased about 11 percent and the median age of the inventory is down from 7.6 months to 7.1 months. Continued efficiency gains are expected as NRR works with an outside consultant and stakeholders on licensing action process improvements.

License Renewal

The *Atomic Energy Act* and NRC regulations limit commercial power reactor licenses to 40 years, but also permit the renewal of such licenses. A nuclear power licensee may apply to the NRC as early as 20 years before expiration of its current license to renew its license for up to 20 years. The application would be subject to public hearings and the formal adjudicatory process. During FY1998, the NRC staff received applications for renewal from the licensees for the Calvert Cliffs and the Oconee facilities. Through ongoing efforts to streamline the license renewal process, the staff estimates that without a hearing, the review of these two applications can be completed in approximately 26 months, down from initial estimates that were as long as 5 years. The reviews for the Calvert Cliffs and Oconee facilities are

proceeding on schedule. To ensure the efficiency and effectiveness of these initial license renewal reviews, a License Renewal Steering Group, consisting of senior NRC managers, was established.

Certification of Next-Generation Reactor Designs

NRC achieved the goals of standardization and a more stable and predictable licensing process through certification of two next-generation reactor designs (Advanced Boiling Water Reactor and System 80+) and issuance of a final design approval for the AP600 design. For the AP600, the NRC issued a final design approval (FDA) and final safety evaluation report (FSER), NUREG-1512, on September 3, 1998. GE Nuclear Energy requested that the NRC terminate its review of the Simplified Boiling Water Reactor design; the NRC staff completed its closeout action in 1998. Design certification is the highest level of design approval ever issued by the NRC, and it is the key process for early resolution of licensing issues. The design certification process prepares the NRC for future licensing of nuclear power plants in an effective and efficient manner. The ACRS provided valuable insights and helped resolve key technical issues associated with the FDA of the AP600 passive plant.

Advanced Reactors. Underlying most aspects of reactor safety is control of the nuclear reaction rate and the flow of coolant. Quantitative analysis of these parameters (referred to as thermal-hydraulic codes) is necessary to design and operate a reactor safely. These codes are carefully fitted to each reactor design to produce a mathematical model that is validated with experimental data. The NRC maintains its own independent thermal-hydraulic codes to analyze unanticipated events in operating reactors and to check licensee analyses that are submitted for action.

During FY 1998, NRC completed all model development, validation, and analysis that supported the final design approval for the Westinghouse AP600 nuclear plant design, which is published in a NUREG-series report.

After completing this work, NRC initiated work to modernize the agency's thermal-hydraulic codes. The capabilities of the four old codes are being consolidated into two modernized codes, called TRAC-M and PARC-3D. They will be modular, easy to use with graphical user interfaces, fast running, and robust. Many of these codes are posted to NRC's WWW site <www.nrc.gov/RES/rescodes.html>.

Independent Program Assessment

In July 1998, the NRC retained a consulting firm (Arthur Andersen) to provide an independent programmatic assessment of NRR and provide assistance in the area of Planning, Budgeting, and Performance Management. Arthur Andersen is to perform an efficiency and effectiveness assessment of NRR. This assessment is intended to aid NRR in its transition from being output based to being outcome based through an Operating Plan for implementation. Arthur Andersen is also reviewing and making recommendations for improvement in the areas of the licensing action review process and work control process.

Other activities that increased process efficiency and effectiveness include—

- streamlining the hearing process associated with license transfers through rulemaking (see "Adjudicatory Proceedings" in this chapter) as well as completing Standard Review Plans for review of license transfer applications;
- implementing an automated system for inspection planning, scheduling, and tracking of findings;
- establishing a PRA Steering Group and Risk-Informed Licensing Panel to ensure appropriate managerial oversight on risk initiatives; and
- increasing training of NRC managers and staff in key areas such as PRA, budgeting, and managing change.

Probabilistic Risk Assessment. An International Cooperative Probabilistic Risk Assessment Research Group (COOPRA) was formed with the NRC serving as Chairman and with over a dozen countries currently participating. The principal objective of COOPRA is to facilitate the timely exchange of information among the member countries about ongoing and planned research in the PRA area. Additionally, the group is focusing on developing cooperative approaches in improving PRA methods that are needed to apply risk information in resolving safety issues.

The NRC staff has actively and extensively been supporting the ASME in the development of a "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications." This standard will set forth the criteria and methods for developing and applying PRA methodology to commercial nuclear power plants and will apply to PRAs used to support design, procurement, construction, operation, and maintenance.

In the Individual Plant Examination of External Events (IPEEE) Program, the staff completed preliminary reviews of all 70 licensees' IPEEE submittals. The staff also completed final reviews of seven submittals. The staff concluded in the Staff Evaluation Reports for each of these seven plants that these submittals met the intent of Supplement 4 to Generic Letter 88-20 (i.e., the IPEEE program). In January 1998, the staff issued a draft report that provided preliminary perspectives on the IPEEE program based on approximately one-third of the reviews that were underway at that time.

The NRC has developed a set of simplified plant analysis risk (SPAR) models for use in accident sequence precursor analyses and prompt assessments of the risk significance of operational events that occur at U. S. commercial nuclear power plants. These plant-specific, train level models were designed for use with the SAPHIRE suite of PRA codes developed for the NRC. NRC staff analysts use these Level 1 SPAR models with a user-friendly interface (the SAPHIRE/GEM code) to estimate the resulting conditional core damage probability (CCDP) given the occurrence of a specific initiating event or the existence of a specific condition at a plant.

Generic Safety Issues. A reactor generic issue is a matter that may affect the design, construction, operation, or decommissioning of all or several

commercial nuclear power reactors or a specific class of reactors. During FY 1998, the NRC began to reassess its Reactor Generic Issues Program to improve the effectiveness and efficiency of the program. The study will be completed in FY 1999 and revised as needed to correct any deficiencies.

During the past 15 years, 639 generic safety issues (GSIs) have been reviewed. No unresolved safety issues (USIs) were identified during this period. Of the 639 GSIs raised, 624 of them have been resolved (or closed) and 15 issues remain open. During FY 1998, one GSI was resolved without imposing new requirements on licensees. The issue that was resolved was GSI-171, "Engineered Safety Features Failure From the Loss-of-Offsite Power Subsequent to a Loss of Coolant Accident."

ANALYSIS OF OPERATIONAL DATA FOR REACTORS

Performance Indicator Program

Most of the analysis reports and data is reported by fiscal year. In some cases, where noted, the information is by calendar year.

The Performance Indicator (PI) Program has analyzed data and information in a consistent manner over a number of years. As measured by these indicators (see Figure 1.1), the U.S. industry average safety performance has improved steadily. Five of the seven performance indicators—automatic scrams, safety system actuations, significant events, equipment forced outages per 1000 critical hours, and collective radiation exposure—show statistically significant improvement since 1985. The number of initiating events resulting in scrams has declined significantly, and this is reflected in fewer and less complicated plant transients. However, equipment problems persist, as evidenced by the percentage of scrams caused by equipment failure (the leading cause of all scrams), the relatively

constant values for safety system failures and forced outage rate since 1985, and the lack of improvement in equipment-forced outages per 1000 critical hours since 1994. Industry average unit availability and capacity factors also improved considerably between 1985 and 1995. However, this was due, not to fewer forced outage hours, but to greatly reduced scheduled outage hours. This is a consequence of longer fuel cycles, which result in greater intervals between refueling outages and shorter refueling outages. Industry average availability and capacity factors increased in 1998 over the previous years of 1996 and 1997.

Accident Sequence Precursor Program

The Accident Sequence Precursor (ASP) Program is a formal program in which nuclear power plant events are analyzed, using PRA techniques. The ASP Program evaluates operational experience using a rigorous method that integrates actual initiating events, plant conditions, and the reliability of standby safety equipment into an overall quantitative assessment, which is expressed as a conditional core damage probability (CCDP). An ASP is an operational event or plant condition that is an important element of a postulated core-damaging (severe accident) sequence. Sequences considered in the ASP Program are those associated with inadequate core cooling, which would be expected to result in core damage. Results of the ASP Program are peer-reviewed by outside consultants, other NRC offices, and the affected licensees. They are used in NRC initiatives such as the Senior Management Meeting process. Figure 1.2 shows that there were five ASP events or conditions in calendar year (CY) 1997, none of which resulted in a CCDP equal to or greater than 10^{-4} .

Regulatory Effectiveness Strategy

In 1995, the NRC initiated a Strategic Assessment and Rebaselining Project that reassessed NRC activities. Enhancing regulatory excellence was a key output of the project. In FY 1998, the NRC

staff developed Strategy 5, one of thirteen strategies to enhance NRC effectiveness and efficiency. Strategy 5, now called Regulatory Effectiveness Strategy, is a systematic process to identify candidate issues for improving the effectiveness and efficiency of rules, standards, regulatory guidance, and their application.

After developing the strategy, the staff began to implement the plan by a pilot effort to review operating experience and obtain stakeholder input. Consistent with the strategy, in September 1998, the NRC staff participated in a public meeting to solicit from external stakeholders comments on the developed process and the identification of candidate issues for input into the process and to ensure that all the meeting comments were addressed. In November 1998, the staff identified three issues and completed its analyses for improving regulatory effectiveness. The identification of issues is the first phase of the overall strategy to be followed by the analysis and proposal phases.

Common-Cause Failure Database and Studies

The NRC and the Idaho National Engineering and Environmental Laboratory (INEEL) developed and maintain a common-cause failure (CCF) database for the U.S. commercial nuclear industry. The latest CCF efforts provided a compact disk (CD) containing the CCF database, CCF analysis software, and associated technical reports that were made available in CY 1998 to the nuclear power reactor licensees. The technical reports on the CD were published as—

- “Common-Cause Failure Database and Analysis System: Overview” (NUREG/CR–6268, Vol. 1);
- “Common-Cause Failure Database and Analysis System: Event Definition and Classification” (NUREG/CR–6268, Vol. 2);
- “Common-Cause Failure Database and Analysis System: Data Collection and Event Coding” (NUREG/CR–6268, Vol. 3); and

- “Common-Cause Failure Database and Analysis System: Software Reference Manual” (NUREG/CR–6268, Vol. 4).

In addition to the CCF database, two common-cause related reports were completed in CY 1998, “Guidelines on Modeling Common-Cause Failures in Probabilistic Risk Assessment” (NUREG/CR–5485) and the “Common-Cause Failure Parameter Estimations” (NUREG/CR–5497).

System Reliability Studies

The NRC uses operational data to determine the reliability of risk-significant systems in U.S. commercial reactors. The data are obtained from licensee event reports, special reports, and monthly operating experience reports. In CY 1998, the following five reports were completed:

1. “Evaluation of Loss of Offsite Power Events at Nuclear Power Plants: 1980–1996” (NUREG/CR–5496);
2. “Rates of Initiating Events at U.S. Nuclear Power Plants: 1987–1995” (NUREG/CR–5750);
3. “Reliability Study: Auxiliary/Emergency Feedwater System, 1987–1995” (NUREG/CR–5500 Vol. 1);
4. “Special Study: Operating Experience Feedback From Service Water System Failures and Degradations (1986–1995)” (AEOD/S98–01); and
5. “High-Pressure Core Spray System Reliability, 1987–1993” (AEOD/S98–02)

Abnormal Occurrences

AEOD administers the Commission’s program for reporting abnormal occurrences (AOs) to Congress. AOs are incidents or events that the Commission determines are significant from the standpoint of public health and safety. There were no AOs at nuclear power plants in FY 1998. The number of AOs at nuclear power plants since 1988

has remained low, averaging two per year. For information on the materials AOs, see Chapter 2, "Nuclear Materials Safety," in this report. A detailed description of AOs may be found in the "Report to Congress on Abnormal Occurrences, Fiscal Year 1998" (NUREG-0090, Vol. 21).

Radiation Exposures and Overexposures

All NRC licensees are required to monitor employee exposure to radiation and radioactive materials at levels sufficient to demonstrate compliance with the occupational dose limits specified in 10 CFR Part 20. Licensees of power reactors are required by 10 CFR 20.2206 to provide to the NRC annual reports of exposure data for individuals for whom personnel monitoring is required. These data are published annually in "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities" (NUREG-0713). The Radiation Exposure Information Reporting System (REIRS) provides data on exposures and overexposures. You may access REIRS through the Internet at <www.saic.com/home/nrc_rad>.

Almost all radiation doses from nuclear power plants are occupational doses, that is, doses to nuclear power plant employees and contractors who work at the plant. The economics of operating a plant creates a strong impetus to reduce exposures and achieve ALARA (as low as reasonably achievable) objectives. As a result, utility violations of NRC limits on personnel exposure are rare, and the vast majority of nuclear power plant personnel have annual exposures far below NRC regulatory limits specified in 10 CFR Part 20. This is believed to result primarily from the licensees' extensive dose-reduction efforts. Some measures that reduce collective exposure are an effective maintenance program, experienced and well-trained personnel, a good water chemistry control program, effective decontamination and cleanup practices, good fuel cladding integrity, effective radiation exposure control programs, good housekeeping, and an alert health physics staff.

Although commercial reactor occupational exposures have been maintained at a low level, a few overexposures continue to occur. The number of occupational overexposures in NRC-licensed reactor and nuclear materials facilities is given in REIRS. Although the data for FY 1998 have not yet been compiled, there have been no reports of deaths or significant radiation exposures owing to civilian nuclear reactors in 1998. REIRS gives the occupational overexposures reported by reactor licensees and those reported by radiography licensees, the nuclear materials licensee category of most concern because of its high rate and magnitude of overexposures. For more information on nuclear materials see Chapter 2.

Understanding Radiological Characterization of Sites. From October 1997 through January 1998, the Region I staff led a special review of activities conducted at the Haddam Neck Station in East Haddam, Connecticut (Figure 1.3). The 1825 Mwt pressurized water reactor was permanently shut down by its operator, Connecticut Yankee Atomic Power Company, in December 1996.

The objectives of this review were to gain a better understanding and appreciation of the scope and extent of previous radiological occurrences in order for the NRC to better assess the acceptability of the licensee's future site radiological characterization efforts and subsequent remediation of affected areas, both on the site and in the environment, and to identify whether licensee activities that resulted in contamination of the site, uncontrolled or unmonitored effluent releases, or insufficient control of licensed materials were considered for or subject to action in accordance with existing NRC regulatory requirements, including enforcement.

On the basis of available information and dose assessments to date, the team concluded that—

- the conduct of licensed activities at the Haddam Neck Plant over the last 30 years apparently did not result in any exposure to the public or environment that exceeded the limits in 10 CFR Part 20;
- the licensee's review of any past radiological occurrences were appropriate and sufficiently comprehensive; and



Figure 1.3 Haddam Neck Plant

- NRC's inspection activities and application of enforcement at Haddam Neck was generally consistent with the agency's existing policy and practices that evolved over time.

ADJUDICATORY PROCEEDINGS

Atomic Safety and Licensing Boards

Adjudicatory hearings at the NRC are conducted by three-member licensing boards or a single presiding officer drawn from the Atomic Safety and Licensing Board Panel. These hearings primarily deal with nuclear reactor licensing, nuclear material licensing, and enforcement matters when licensees and other affected entities contest penalties or orders brought against them by the NRC staff for alleged infractions of NRC regulations. Additional hearings are sometimes held that deal with antitrust licensing, personnel

matters, and special Commission-ordered proceedings.

Panel Judges. Panel hearings are conducted by three-member licensing boards or a single presiding officer who are assigned from the Panel's pool of administrative judges. Panel judges are lawyers or technical members with expertise in a wide variety of disciplines. At the beginning of FY 1998, the Panel consisted of 30 judges (12 full-time and 18 part-time). By year's end, this number was reduced 25 percent by the death, resignation, or retirement of 1 full-time and 7 part-time judges, leaving the Panel with 11 full-time and 11 part-time judges. Five of these remaining judges were lawyers, 8 were environmental scientists, 6 were engineers or physicists, and 3 were medical doctors. This 25-percent decrease in judges during the year could prove significant if estimated future increases in the Panel's caseload occurs.

Panel Caseload. The FY 1998 Panel caseload comprised a total of 30 proceedings. Of these, 12 involved nuclear power plants or related facilities and 18 involved other Commission licensees.

These cases represent a 15-percent increase over the total number of cases in FY 1997. In addition, 21 new cases were docketed in FY 1998, a 40-percent increase over the previous year when

15 new cases were docketed. A significant portion of the FY 1998 increase was attributable to reactor licensing cases, which increased 100 percent over FY 1997.

Types of cases on the FY 1998 docket included the following:

Case Type	Number of Cases
Reactor License Amendment	8
Reactor License Extension	2
Reactor Operator Licensing	1
Enforcement	9
Materials Licenses	7
Remand	2
Other	1

The Panel's FY 1998 caseload followed a trend, begun in the late 1980s, of a docket primarily consisting of enforcement cases, materials licensing cases, and reactor license amendment cases. It was reflective of the regulation of a maturing industry, and differed significantly from the Panel caseload in previous decades, which consisted mainly of construction permit and operating license cases for licensing new reactors.

The materials licensing, reactor license amendment, and enforcement cases of the 1990s are expected to continue in the future. Nevertheless, beginning in FY 1998 and gradually increasing over the next several years, new types of cases are expected that could be especially large-scale. These will include a series of reactor license extension cases as utilities attempt to extend the operating lives of their reactors. They also will include an assortment of highly contested, high-level waste storage cases dealing with the licensing of privately operated offsite interim spent fuel storage facilities and the projected Yucca Mountain permanent high-level waste storage facility. Also on the horizon are potential highly contested cases involving the licensing of novel nuclear fuel and production facilities, such as a proposed new AVLIS enrichment facility, a MOX fuel plant for burning plutonium, and a tritium production facility, and the proposed regulation of U.S. Department of

Energy (DOE) facilities. A MOX fuel plant manufactures MOX fuel for use in power reactors as a means of disposing of excess weapons plutonium.

Significant FY 1998 Proceedings. FY 1998 marked the advent of utilities seeking 20-year operating license extensions for reactors licensed by the NRC. During the year, these extensions were requested by Baltimore Gas and Electric Company for its Calvert Cliffs Units 1 and 2 and by Duke Power Corporation for its Oconee Units 1, 2, and 3. These applications were opposed by local public interest groups and individuals residing near these facilities. Among other things, petitioners in both proceedings contended that the extension requests should be rejected because a final NRC staff determination on some relevant technical issues had not been reached. At fiscal year's end, licensing board decisions in both proceedings were pending with respect to the petitioners' standing to intervene and the admissibility of contentions.

Another especially significant case during the year was the *Private Fuel Storage* proceeding. This case involved the first attempt by private utilities to jointly build an interim waste facility for offsite storage of spent fuel until the Yucca Mountain permanent facility is ready. This application was filed by a consortium of 11 utilities that had contracted with the Skull Valley Band of Goshute Indians to build an interim high-level waste storage facility on their Utah reservation located about 40 miles southwest of Salt Lake City. Opposition to the application was substantial, and intervention was granted by a licensing board to the State of Utah, two Native American tribes and a Native American organization, and several local ranching companies. The board also accepted a number of the intervenors' safety, environmental, and physical security contentions. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142 (1998); LBP-98-10, 47 NRC 288 (1998); LBP-98-13, 46 NRC 360 (1998); LBP-98-17, 48 NRC 69 (1998). The first planned series of hearings on the contentions are scheduled to begin in November 2000.

Cases Closed During FY 1998. Cases closed by licensing boards and presiding officers during FY 1998 included the following:

Enforcement Cases

- *Barnett Industrial X-Ray, Inc.* (Stillwater, Oklahoma), LBP-97-19, 46 NRC 237 (1997)
- *21st Century Technologies, Inc.* (Fort Worth, Texas), LBP-98-1, 47 NRC1 (1998)
- *Power Inspection, Inc.*, LBP-98-6, 47 NRC 140 (1998)
- *NDT Services, Inc.*, Slip Opinion (July 6, 1998)
- *John Boschuk, Jr.*, LBP-98-15, 48 NRC 57 (1998)
- *Lourdes T. Boschuk*, LBP-98-16, 48 NRC 63 (1998)

Materials Licensing Cases

- *Quivera Mining Company* (Ambrosia Lake Facility), LBP-97-20, 46 NRC 257 (1997)
- *International Uranium (USA) Corp.* (White Mesa Uranium Mill), LBP-97-21, 46 NRC 273 (1997)
- *Atlas Corporation* (Moab, Utah), LBP-98-18, 48 NRC 78 (1998)

Remanded Case

- *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), LBP-97-22, 46 NRC 275 (1997); CLI-98-5, 47 NRC 113 (1998)

License Amendment Case

- *Yankee Atomic Electric Company* (Yankee Nuclear Power Station), LBP-98-12, 47 NRC 343 (1998)

Greater Efficiency in Adjudicatory Proceedings

As part of its broad initiative to increase effectiveness of the NRC's programs and processes, the Commission on July 28, 1998, issued a policy statement entitled "Policy on Conduct of Adjudicatory Proceedings." 63 FR 41872 (August 31, 1998). This statement critically reassessed the NRC's practices and procedures for conducting adjudicatory proceedings under the

existing Rules of Practice in 10 CFR Part 2, primarily Subpart G, and set out certain measures that the hearing boards and presiding officers should employ to ensure efficient conduct of proceedings. As one of these measures, the Commission directed boards "to shorten the filing and response times set forth in the regulations to the extent practical in a specific proceeding," noting that 10 CFR 2.718 gives presiding officers authority to alter the schedules established in Part 2 for various filings. The Commission also directed licensing boards to establish procedures for electronic filing and to consider use of new technologies to expedite proceedings. The policy statement further noted that the Commission itself may set milestones for the completion of proceedings. If a licensing board determines that a Commission-set milestone may be missed by more than 30 days, the board must notify the Commission promptly, explaining the delay and describing measures the board will take, where possible, to restore the overall schedule.

The Commission emphasized that by itself action by the boards will not achieve the objectives of the policy statement. The parties to a proceeding must satisfy their obligations and must adhere to the specified time frames. Extensions of time may be granted, the Commission said, but "only when warranted by unavoidable and extreme circumstances." With regard to contentions, the Commission reminded parties that the burden remains on the proponent, not on the licensing board, to formulate the contention and provide necessary information to establish admissibility. A board may raise a matter on its own motion "only in extraordinary circumstances" and may not proceed further with sua sponte issues without the Commission's approval.

To reduce time spent in the prehearing stage, the policy statement directs the staff to establish a case file after the board completes its rulings on contentions. This file, periodically updated, shall include the application at issue and relevant NRC reports and correspondence and will be made available to the parties. No other discovery against the staff will be allowed until the staff has issued review documents regarding the application. The boards should set reasonable bounds on discovery, for example by limiting the rounds of interrogatories and depositions and the time for their completion. The Commission concluded the policy statement by noting its intention to monitor

proceedings to ensure their fairness and timeliness, to provide guidance to boards and parties in individual proceedings, and to decide issues “in the interest of a prompt and effective resolution of the matters set for adjudication.”

Pursuant to the policy set out in this statement, the Commission issued case-specific orders in two proceedings on nuclear power plant operating license renewal applications: *Baltimore Gas & Electric Company* (Calvert Cliffs Nuclear Power Plant Units 1 and 2), CLI-98-14, 48 NRC 39 (1998); *Duke Energy Corporation* (Oconee Nuclear Station, Units 1, 2, and 3) CLI-98-17, 48 NRC 123 (1998). In each order the Commission established as a goal the issuance of a Commission decision on the pending application in about 2 1/2 years from the date the application was received. The Commission set out several milestones that the licensing board should adopt for conclusion of significant steps in the hearing. No extensions of time are to be granted “absent unavoidable or extreme circumstances.” The Commission stated in each order: “We do not expect the Licensing Board to sacrifice fairness and sound decision-making to expedite any hearing granted on this application.”

New Procedures for License Transfer Applications

On December 3, 1998, the Commission issued a final rule amending its regulations to provide uniform procedures and rules of practice for handling requests for hearings associated with license transfer applications. These procedures are set out in a new Subpart M to 10 CFR Part 2, the “NRC’s Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders.” The new procedures are informal and apply to transfers of material and reactor licenses and also licenses issued under the regulations governing the independent storage of spent nuclear fuel and high level radioactive waste. The rule became effective immediately upon publication in the *Federal Register*. 63 FR 66721 (December 3, 1998).

In promulgating the new Subpart M, the Commission noted its expectation that the ongoing restructuring of the electric power industry will cause a continuing high rate of requests for approval of license transfers. Under Section 184 of the *Atomic Energy Act*, no license may be transferred, assigned, or disposed of by transfer of control unless the Commission finds the transfer in accord with the provisions of this act and gives its consent. “Typical staff review of such applications,” the Commission observed, “consists largely of assuring that the ultimately licensed entity has the capability to meet financial qualification and decommissioning funding aspects of NRC regulations.” In an increasingly competitive environment, license transfer applications require expeditious decisionmaking. Moreover, these transfers generally do not involve the kind of technical issues with immediate impact on facility operation safety that may benefit from review under the complex and often time-consuming formal hearing procedures of 10 CFR Part 2, Subpart G. The Commission noted its conclusion that the *Atomic Energy Act* does not require formal, trial-type hearings but rather gives the Commission flexibility to fashion its procedures to meet the needs of the particular type of decisionmaking in question. Accordingly, the Commission concluded that for hearings on license transfers, uniform informal procedures should be adopted.

The informal Subpart M procedures are similar to those used by the Commission in cases involving export licensing hearings under 10 CFR Part 110. Proceedings will be oral unless all parties agree to a written proceeding. The Commission itself will conduct the hearing or will appoint a Presiding Officer to be responsible for collecting evidence and developing a record, which will then be submitted to the Commission for a final decision. Parties may present recommended questions to the Presiding Officer, but only the Presiding Officer may question witnesses. To improve efficiency, the rule imposes schedular milestones for the filing of testimony and responses and for the commencement of the oral hearings, subject to adjustment by the Presiding Officer. In routine cases, these procedures are expected to result in the issuance of a final Commission decision on the

license transfer within 6 to 8 months of the notice of receipt of the application.

Decisions

City of Benton v. NRC, No. 95-1402 (D.C. Cir., decided Feb. 27, 1998)

This long-running lawsuit challenged (on antitrust grounds) two NRC license amendments issued in 1995: one to transfer control of the River Bend Nuclear Power Reactor from Gulf States Utilities to Entergy Corporation, and one to transfer operating responsibility of River Bend to Entergy Operations, Inc. Originally, Cajun Electric Power Cooperative joined a group known as Arkansas Cities and Cooperative (ACC) as petitioners, but Cajun ultimately dropped out of the suit as a result of a settlement agreement in bankruptcy proceedings.

The parties initially filed full briefs in the case in 1995. On the eve of oral argument, however, the court of appeals decided to hold the case in abeyance to await the outcome of the then-pending Cajun bankruptcy proceeding. In 1997, after Cajun withdrew its petition for review, the court reinstated the case to its active docket. The parties then filed fresh briefs. On February 27, 1998, the court (Williams, Sentelle & Henderson, JJ.) dismissed the case in its entirety for lack of jurisdiction.

The court held, as we had argued in our brief, that ACC's petition for review was fatally defective for failure to challenge a final agency order. ACC's petition had designated for review the NRC staff's interlocutory finding of no significant antitrust changes rather than the Commission's ultimate order actually granting the license amendments. The court stated that "[i]n a licensing proceeding, it is the order granting or denying the license that ordinarily is the final order," and concluded that "[w]hatever order ACC intended to ask the court to review, it named the wrong order in its petition."

ACC did not seek certiorari in the Supreme Court.

Pending Litigation

Thermal Science, Inc. v. NRC, No. 98-3147 (8th Cir, stay denied September 10, 1998)

This is the continuation of the effort by Thermal Science to challenge NRC consideration of a proposed \$900,000 civil penalty for alleged false statements to the agency about the testing of Thermal Science's Thermo-Lag product. After a lengthy delay, the district court dismissed the suit outright as premature and also refused to stay administrative proceedings pending appeal. Thermal Science then appealed and sought a stay from the court of appeals. The NRC opposed the stay. In a one-sentence order, the court of appeals denied the stay motion. The court also set a briefing schedule on the merits of the appeal. Thermal Science continues to argue that NRC consideration of a civil penalty violates the Constitution's Double Jeopardy Clause and is beyond the agency's statutory authority. The court of appeals will likely hear the case in early 1999.

ENFORCEMENT AND INVESTIGATIVE ACTIONS

Enforcement

The Commission has developed an enforcement program and Enforcement Policy to support the NRC's overall safety mission in protecting the public and the environment. Consistent with that purpose, enforcement action is used as a deterrent to emphasize the importance of compliance with regulatory requirements, and to encourage prompt identification and prompt, comprehensive correction of violations. The Office of Enforcement (OE) is responsible for managing the Commission's enforcement program. The NRC's enforcement program is addressed in the agency's Enforcement Policy, NUREG-1600, Rev. 1 "General Statement of Policy and Procedure for NRC Enforcement Actions."

Escalated Enforcement Activities. All violations (except minor violations) identified through inspections and investigations are subject to civil

enforcement action and may also be subject to criminal prosecution. After an apparent violation is identified, the severity is evaluated in order to determine the appropriate enforcement sanction. Severity levels range from Level I, for the most significant violations, to Level IV, for those of more than minor concern. Minor violations are not subject to formal enforcement action. The NRC considers violations categorized at Severity Level I and II to be very significant, as well as enforcement actions consisting of multiple Severity Level III violations. During FY 1998, the agency issued five Severity Level II violations, and six multiple Severity Level III violation actions to reactor licensees. No Severity Level I violations were issued during this period.

The NRC uses three primary enforcement sanctions: Notices of Violation (NOV), civil penalties, and orders. The NRC considers civil penalties, orders, and NOVs, including Severity Level I, II, and III violations, as escalated enforcement actions.

An NOV sets forth one or more violations of a legally binding requirement and normally requires a response from the licensee describing the reasons for the violation, the corrective steps taken or planned, and the date when actions will be complete. During FY 1998, the agency issued 33 escalated NOVs to reactor licensees.

A civil penalty is a monetary fine considered for Severity Level III violations and normally assessed for Severity Level I and II violations and knowing and conscious violations of reporting requirements of Section 206 of the *Energy Reorganization Act*. Section 234 of the *Atomic Energy Act (AEA)* provides for penalties of up to \$100,000 per violation per day; but that amount was adjusted by the *Debt Collection Improvement Act of 1996* to \$110,000. During FY 1998, the agency proposed 47 individual civil penalties to reactor licensees. Most licensees pay the civil penalty when it is proposed. However, in some cases, the agency imposes the civil penalty through the issuance of an order. Table 1.5 includes additional civil penalty information. Note that a civil penalty may be proposed in one fiscal year and paid or imposed in another fiscal year.

	FY 98
Number of Proposed Civil Penalties	47
Amount of Proposed Civil Penalties	\$4,936,000
Amount of Paid Civil Penalties	\$5,008,000
Number of Imposed Civil Penalties	1
Amount of Imposed Civil Penalties	\$100,000

In addition to NOVs and civil penalties, orders may be used to modify, suspend, or revoke licenses. Orders may require additional corrective actions, such as removing specified individuals from licensed activities or requiring additional controls or outside audits. Persons adversely affected by orders that modify, suspend, or revoke a license, or that take other actions may request a hearing. During FY 1998, the agency issued one order to a reactor licensee. In addition, one civil penalty imposition order was issued.

A predecisional enforcement conference is normally conducted with a licensee or individual before making an enforcement decision if escalated enforcement action appears to be warranted and if the NRC concludes that it is necessary or the licensee or individual requests it. During FY 1998, the agency conducted a total of 122 conferences for reactor and material licensees.

The NRC issues a press release with a proposed civil penalty or order. All orders are published in the *Federal Register*.

Additional information on the NRC's enforcement program and enforcement activities is available in the OE's FY1998 Annual Report. This document is available in the Public Document Room and on NRC's WWW site at <www.nrc.gov/OE/>. This Web site also includes copies of significant enforcement actions that the agency has issued arranged by reactor, materials, and individual actions.

Investigations

The information in this FY 1998 NRC Annual Report is taken from the Office of Investigations (OI) annual report to the Commission of its activities and actions. A copy of the FY 1998 OI Annual Report (37 pages, including graphs and attachments) is available for your information upon request to e-mail address <BSB@nrc.gov>.

OI conducts investigations of alleged wrongdoing by individuals or organizations who

- are licensed by the NRC;
- are applicants for licenses; or
- are licensee contractors or vendors.¹

There were 1,026 allegations regarding potential violations of its rules, regulations, or requirements received by the NRC during FY 1998. Of these allegations, approximately 19 percent involved potential wrongdoing. The total OI inventory of cases under investigation in FY 1998 was 292. Of these, OI closed 194 cases, or 66 percent of the inventory. Approximately 5 percent of these cases contained multiple suspected wrongdoing violations.

OI surpassed its performance goal to complete cases within an average of 12 months. The FY 1998 average for completing a case was 6.3 months. OI was also successful in reducing the percentage of cases in the inventory open longer than 12 months to 8 percent. OI established an additional goal in FY 1998 of bringing to a full conclusion, based on the merits of the case, 75 percent, or more, of cases within the inventory. OI surpassed this goal in FY 1998 by achieving a percentage of substantive cases of 93 percent.

Of the 194 investigations closed in FY 1998, 53 cases were referred to DOJ for prosecutorial review. During FY 1998, OI supported two Federal grand juries. In addition, OI investigations resulted in four guilty pleas in Federal court.

NRC took 182 escalated enforcement actions in FY 1998, which included civil penalties, orders,

and NOVs at or above Severity Level III. In 39, or 21 percent, of these actions, the OI investigative findings were factored into the decision to take escalated enforcement action.

Advisory Committee on Reactor Safeguards

The ACRS, established by statute in 1957 by revision of the *Atomic Energy Act of 1954*, provides advice to the NRC on potential hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards. The *Atomic Energy Act* also requires that the ACRS advise the Commission with respect to the safety of operating reactors and perform such other duties as the Commission may request. Consistent with the *Energy Reorganization Act of 1974*, the committee will review any matter related to the safety of nuclear facilities and activities of the DOE that DOE requests. Upon request, the ACRS also provides advice to the Defense Nuclear Facilities Safety Board and the U.S. Navy. In addition, the ACRS, on its own initiative, reviews specific generic matters on nuclear facility safety-related items.

The ACRS reviews requests for preapplication site and standard plant design approvals, as well as applications for construction permits, operating licenses for power reactors, 10 CFR Part 52 licenses, and certain test reactor facility licenses for construction and operation. With respect to reactors that are already licensed to operate, the ACRS is involved in the review and evaluation of any substantive licensing changes, corrective actions resulting from operating events and incidents, and the resolution of generic safety issues.

Activities of the ACRS are conducted in accordance with the *Federal Advisory Committee Act (FACA)*, which provides for public attendance at and participation in ACRS meetings. Consistent with the charter of the ACRS and FACA requirements, unclassified ACRS reports are made part of the public record. The ACRS Web address is <<http://www.nrc.gov/ACRSACNW/>>.

The ACRS membership is drawn from various scientific and engineering disciplines. Its current

¹Note that allegations involving NRC employees or contractors to the NRC come under the purview of the NRC's Office of the Inspector General, and not under the purview of OI.

membership includes those experienced in the areas of nuclear power plant operations; probabilistic risk analysis; analysis of severe reactor accident phenomena; design of plant structures, systems, and components; material sciences; mechanical, civil, and electrical engineering; and digital I&C systems.

During FY 1998, the ACRS and ACNW completed a Report to Congress on Nuclear Safety Research, dated February 24, 1998, and a detailed report to the Commission on the NRC Safety Research Program: "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program" (NUREG 1635, Vol. 1).

The following reports were among the most significant ACRS contributions during FY 1998:

12/11/97 — Proposed Final Regulatory Guide 1.174 and Standard Review Plan Chapter 19 for Risk-Informed, Performance-Based Regulation

12/16/97 — Treatment of Uncertainties Versus Point Values in the PRA-Related Decisionmaking Process

03/12/98 — Proposed Final Standard Review Plan Sections and Regulatory Guides for Risk-Informed, Performance-Based Regulation for Inservice Testing, Graded Quality Assurance, and Technical Specifications

03/16/98 — SECY-98-001, Mechanism for Addressing Generic Safety Issues

05/11/98 — Elevation of CDF to a Fundamental Safety Goal and Possible Revision of the Commission's Safety Goal Policy Statement

07/16/98 — Proposed Revisions to 10 CFR 50.59 (Changes, Tests and Experiments)

07/24/98 — General Electric Nuclear Energy Extended Power Uprate Program and Monticello Nuclear Generating Plant Power Level Increase Request

09/15/98 — Application for Power Level Increase for Edwin I. Hatch Nuclear Power Plant, Units 1 and 2

09/30/98 — Impact of Probabilistic Risk Assessment Results and Insights on the Regulatory System

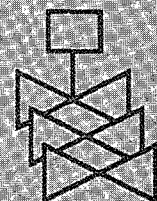
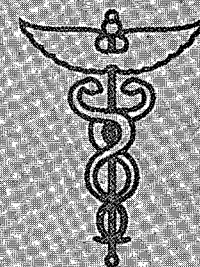
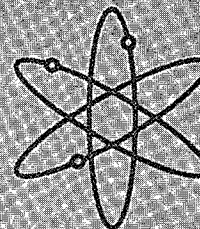
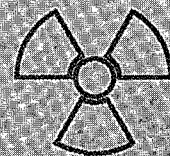
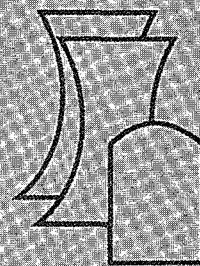
Nuclear Materials Safety

The strategic goal for nuclear materials safety is to prevent radiation-related deaths and illnesses, protect the environment, and safeguard special nuclear material and facilities in the civilian use of source, byproduct, and special nuclear materials. In Fiscal Year (FY) 1998, the U.S. Nuclear Regulatory Commission (NRC) met the associated performance goals and had (1) no radiation-related deaths resulting from civilian use of source, byproduct, or special nuclear materials; (2) no increase in the number of significant radiation exposures resulting from loss or use of source, byproduct, or special nuclear materials; (3) no offsite releases of radioactive material from operating facilities that have the potential to cause an adverse impact on the environment; (4) no significant accidental releases of radioactive material from the storage or transportation of nuclear material or nuclear waste; and (5) no loss, theft, or diversion of formula quantities of strategic special nuclear materials or unauthorized enrichment of special nuclear material regulated by the NRC. Data for the sixth goal, environmental impacts, are considered through the *National Environmental Policy Act* (NEPA) process before regulatory action is taken and will be available for FY 1999.

The NRC's Office of Nuclear Material Safety and Safeguards (NMSS) and the NRC's four regional offices regulate the safe use of nuclear materials under several broad programs. NRC regulates approximately 5,830 specific licensees, and the 30 Agreement States have formal agreements with the NRC under which they have assumed regulatory authority over approximately 15,000 radioactive materials specific licensees. Other radioactive materials, primarily incorporated into devices, are used under general licenses issued by the NRC and Agreement States. Material safety, fuel facility safety and safeguards, and storage and transport of nuclear fuel are discussed in this chapter, and waste management activities are discussed in Chapter 3.

Activities covered in this chapter include licensing, certification, inspection, and other regulatory actions concerned with the production and use of reactor-produced radioisotopes (byproduct material). Nuclear materials regulation during FY 1998 comprised—

- 3,437 licensing actions. Of this total, 277 were for new licenses, 2,940 were for amendments, 67 were for license renewals, and 153 were sealed source and device reviews;
- 1,884 materials licensee inspections;
- 10 reviews and 1 followup review of Agreement State programs and 2 regional integrated program reviews;



- 101 licensing and certification actions (e.g., new, amended, and renewed licenses or certificates) for enrichment, fuel fabrication, conversion, and other fuel cycle facilities; and
- 191 fuel cycle facility licensee and certificate holder inspections.

GENERIC MATERIALS LICENSING AND INSPECTION ACTIVITIES

The materials program is designed to ensure that activities involving uses of radionuclides do not endanger public health and safety. As of September 30, 1998, the NRC administered approximately 5,830 specific licenses for the possession and use of nuclear materials in medical and industrial applications. This administration represents a reduction of about 70 specific licenses in the past year. Table 2.1 shows the distribution of licenses by region. The 30 Agreement States administer about another 15,000 specific licenses.

Table 2.1 Distribution of NRC Nuclear Materials Specific Licenses (as of October 1, 1998)

Region I	1,765
Region II	834
Region III	2,171
Region IV	842
Headquarters	218
Total:	5,830

The NRC regional staff completed 1,884 inspections of materials facilities in FY 1998. The regions oversee almost all materials licensees, with the exception of those holding exempt distribution licenses and sealed source and device design licenses.

The NRC completed 3,437 licensing actions during the fiscal year. Of this total, 277 were for new licenses, 2,940 were for amendments, 67 were for

license renewals, and 153 were sealed source and device reviews.

In FY 1998, the staff issued six draft and three final reports (various volumes of NUREG-1556) of revised program-specific guidance for licensees and reviewers that were developed using business process redesign techniques. These reports consolidate guidance from a number of different sources and will help to streamline the licensing process. When issued in final form, they are intended for use by applicants, licensees, NRC license reviewers, and other NRC personnel. They take a risk-informed, performance-based approach to regulation.

In FY 1998, NRC completed a study, and developed a Commission paper, based on the 1996 efforts of an NRC/Agreement State Working Group, on increased oversight of general licenses. NRC developed a plan regarding the control and accountability of specifically licensed and generally licensed devices with changes to the current licensing and inspection programs for device users. The Commission plan included a proposed rule, implementation of a registration program, and follow-up activities with users who do not register with NRC or who have indicated that they cannot account for their devices.

The staff also coordinated with DOE to accept several orphaned sources under an existing Memorandum of Understanding. These ranged from gauging devices to well-logging sources. In addition, NRC worked with the Conference of Radiation Control Program Directors' E-34 Committee on Unwanted Radioactive Material in development of a national orphan source program.

Medical Use of Byproduct Material

NRC has published a proposed rule to revise its regulations governing the medical use of byproduct material. The overall goal of the proposed rule is to focus NRC's regulations on those medical procedures that pose the highest risk and to structure NRC's regulations to be risk informed and performance based. Three public workshops were held (San Francisco, California; Kansas City, Missouri; and Rockville, Maryland)

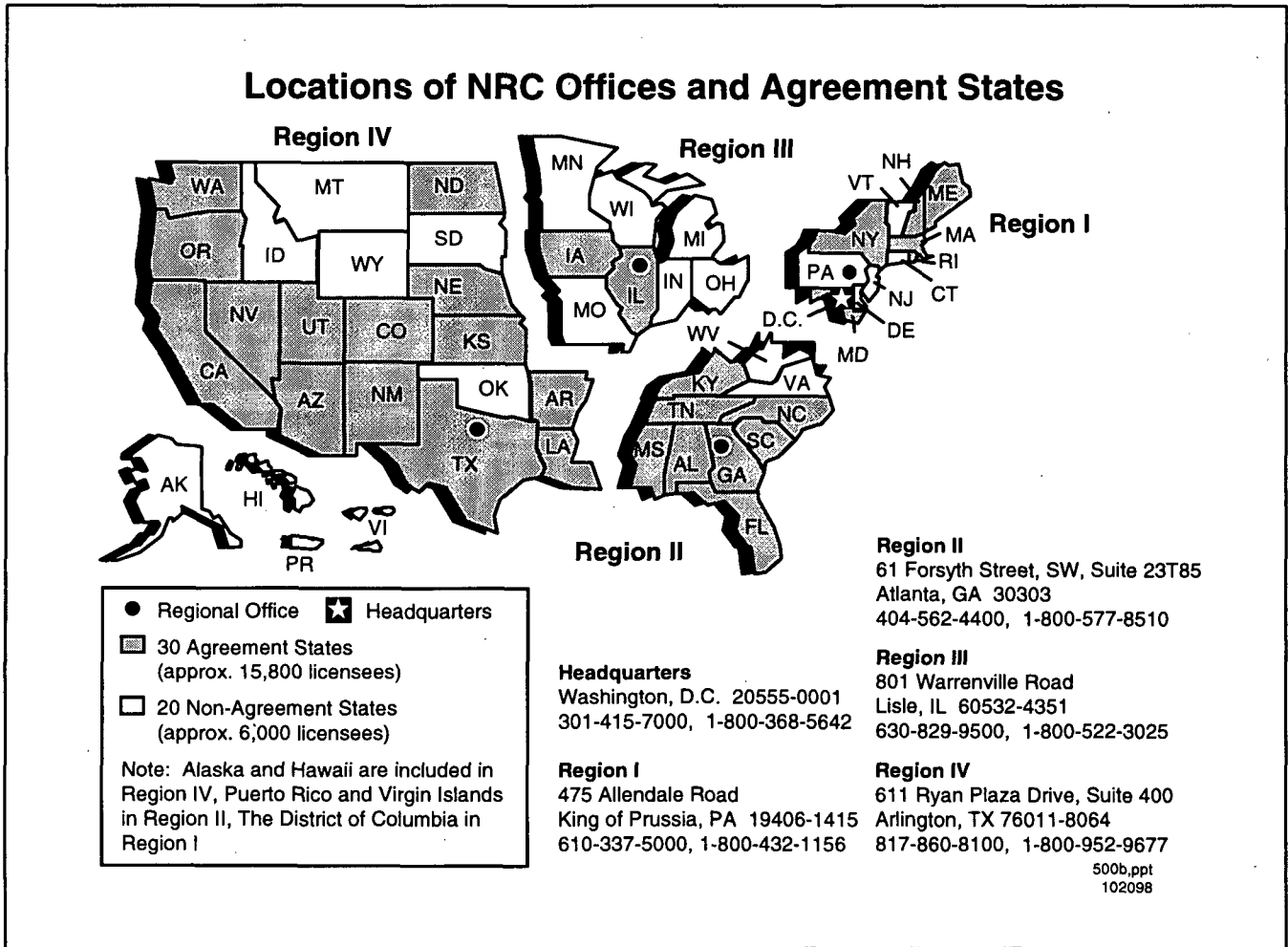


Figure 2.1 U.S. Map. Location of NRC Offices and Agreement States.

to solicit comments from stakeholders and other members of the public. The NRC anticipates publishing the final rule in FY 2000.

AGREEMENT STATES PROGRAM

A total of 30 States have formal agreements with the NRC by which those States have assumed regulatory responsibility over byproduct, source, and small quantities of special nuclear material. Approximately 15,000 specific radioactive materials licenses are regulated by the Agreement States, representing about 70 percent of all

radioactive material licenses issued in the United States. The States of Minnesota, Ohio, Oklahoma, Pennsylvania, and Wisconsin continue to actively work toward becoming Agreement States.

Cooperation With States

NRC continued activities to ensure early and substantive involvement of Agreement States in NRC rulemaking and other regulatory issues. These activities included early opportunity to comment on draft rulemaking plans and the use of electronic communication, via e-mail and bulletin boards, to facilitate the transfer of information.

A current list of Agreement States (including names, addresses, and telephone numbers of

responsible officials) may be obtained upon request from NRC's regional offices. Or visit the NRC Office of State Programs' (OSP's) Home Page <<http://www.hsrdo.ornl.gov/nrc>> and choose "Directories" and then "State Program Directors."

Joint NRC-Agreement State Working Groups have also continued to be effectively used to address common issues and to evaluate improvements in the regulation of radioactive material. NRC's participation in the Annual All Agreement States Meeting also affords an opportunity for further information exchange and cooperation.

Technical Assistance to States

The NRC continued to provide technical assistance to Agreement States by responding to requests for licensing and inspection information, reviewing and commenting on proposed changes to State regulations, and by dealing with specific or unusual radiation applications requiring specialized expertise and knowledge.

Training Offered State Personnel

The NRC sponsors training courses and workshops for Agreement State and NRC staff to assist State radiation control personnel meet their goal of maintaining high-quality regulatory programs. Course subjects are diverse, covering health physics, industrial radiography safety, well-logging, environmental monitoring, irradiator technology, transportation of radioactive nuclear materials, site decommissioning characterization, nuclear medicine, inspection procedures, and materials licensing. In addition, special workshops on specific topics are held, as needed. The NRC sponsored 34 training courses and workshops attended by 357 State radiation control personnel during FY 1998. The sessions were also attended by NRC staff and by military personnel, in addition to officials from foreign countries.

Review of State Regulatory Programs

The *Atomic Energy Act of 1954*, as amended, requires that NRC ensure that public health and safety are being adequately protected and that Agreement State programs are compatible with NRC's program. NRC uses the Integrated Materials Performance Evaluation Program (IMPEP) to periodically evaluate NRC's regional office and Agreement State materials licensing and inspection programs. The IMPEP uses five common performance indicators: status of materials inspection program; technical staffing and training; technical quality of licensing; technical quality of inspection; and response to incidents and allegations. Program areas unique to NRC regions and Agreement States are reviewed as noncommon performance indicators. These reviews were conducted using interdisciplinary teams with members drawn from NMSS, OSP, the NRC regions, and the Agreement States. A Management Review Board provides a senior panel review of the IMPEP team's recommendations and issues the official NRC findings to the region or the Agreement State. An Agreement State management liaison representative serves on this board. The IMPEP has proved to be effective both in terms of evaluating the adequacy and compatibility of the materials programs and in improving technical and programmatic exchange of information between NRC and the Agreement States. Followup or special reviews are also conducted, as needed.

During FY 1998, NRC continued implementation of the IMPEP to evaluate Agreement State and NRC regional materials programs. NRC performed 10 IMPEP reviews and 1 followup review of Agreement State programs. Ten of the Agreement State IMPEP reviews were found adequate and compatible with NRC's oversight programs, and one Agreement State's program was found adequate but needs to be improved and to be made compatible with the others. NRC also performed two regional IMPEP reviews and found those programs adequate.

Operational Events in Agreement States

Information on events that have occurred in Agreement States involving the use of radioactive byproduct material is routinely exchanged with the NRC and incorporated into the Nuclear Materials Events Database. Safety-significant Agreement State and NRC operational events are discussed at periodic NRC staff meetings, and they emphasize identifying the cause of each event. During the past year, Agreement State personnel investigated material events involving overexposures, unplanned contamination, leaking sources, industrial radiography, lost or stolen equipment, and equipment failure, as well as incidents involving the administration of radioactive byproduct material to individuals for medical diagnosis and therapy. When short- and long-term analysis of operational events lead to effective generic remedies that reduce the likelihood of event recurrence, the information is disseminated to the appropriate regulatory agencies and users.

The Conference of Radiation Control Program Directors, Inc.

The NRC, through the OSP, continues to be a Federal liaison to the Board of Directors of the Conference of Radiation Control Program Directors, Inc. (CRCPD), to help ensure that State and Commission programs for protection against the hazards of radiation are coordinated. The CRCPD was formed in 1968 to provide a forum in which Federal, State, and local radiation control program officials could address governmental radiation protection issues, mainly through working groups and committees. As many as 15 NRC resource persons are represented on approximately 18 committees and working groups, which meet throughout the year. The NRC contributed \$110,000 in FY 1998 to the CRCPD.

Fuel Cycle Facilities

In FY 1998, the NRC completed 60 safety-related source and special nuclear material (S&SNM) license/certificate amendments, 37 S&SNM technical reviews, and 4 S&SNM license renewals. Environmental assessments were completed for the following licensing actions: Shieldalloy Metallurgical Corporation (New Jersey) source material license renewal, General Atomics (California) Site Decommissioning Plan, and Fansteel (Oklahoma) authorization to process onsite source material. All other fuel cycle licensing actions, including research and development facility license renewals and fuel cycle license amendments, were determined to meet the environmental criteria in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and did not require an environmental review. During FY 1998, NRC performed 134 inspections at eight fuel cycle facilities and 57 inspections at the two gaseous diffusion plants (GDPs).

During FY 1998, NRC renewed three SNM licenses that included specific review of the criticality safety function and 10 nuclear criticality safety (NCS) related license or certificate amendments. Using a risk-informed and performance-based approach, the NRC inspection staff confirmed that criticality safety was adequate at each fuel licensee and GDP.

In FY 1998, NRC inspections and United States Enrichment Corporation (USEC) self-assessments identified significant shortcomings in the implementation of the NCS program at the Portsmouth GDP. Of the 183 event reports made to the NRC for the Portsmouth GDP, 155 dealt with NCS. NRC used a Special Inspection Team to inspect nuclear criticality safety issues. As a result of this investigation, a comprehensive NCS corrective action program was initiated and a corrective action plan was implemented that required ongoing quarterly updates of progress on the completion of plan milestones. A significant reduction in the number of NCS-related events indicates that Portsmouth GDP is improving its compliance with NCS requirements.

During FY 1998, all inventory differences between book and measured inventories of SNM reported

by licensees to the NRC were either within regulatory limits or within expected ranges. No investigations or anomalous conditions were reported during the report period.

The NRC maintained two full-time resident inspectors at each GDP and one resident inspector at each of the two highly enriched uranium fuel fabrication facilities. The regional staffs have continued to be active in improving the inspection focus on identification of criticality safety issues in fuel facilities. The regions have worked with NMSS to ensure that the inspection planning process is based on licensee performance and that all inspections are integrated and coordinated. As examples of this progress, the staff significantly improved the safety margin (1) by holding an Operational Readiness Review at Siemens for a new process begun in FY 1998 and (2) by conducting preoperational and start-up inspections at Nuclear Fuel Services for new processes and for the restart of processes that had been idle for an extended time.

During FY 1998, the NRC continued its support of the U.S. Department of Energy (DOE) Hanford Tank Waste Remediation System Privatization (TWRS-P) Project under a DOE-NRC Memorandum of Understanding, dated January 29, 1997. The purpose of the cooperative agreement between the two agencies is to establish the basis for the development and execution of a comprehensive regulatory program by DOE that is consistent with NRC's regulatory approach for protecting workers, the general public, and the environment. During this year, the NRC has been providing technical assistance and regulatory perspective to the DOE Regulatory Unit at the Hanford Site that is responsible for the TWRS-P project by assisting in the review of DOE and DOE contractor documents involving the establishment of design criteria and design standards. NRC has an assigned site representative at Richland, Washington, and the NRC staff at headquarters is also supporting this activity.

On April 22, 1998, Louisiana Energy Services, L.P. (LES), formally withdrew its application for a license to construct and operate a gas centrifuge uranium enrichment plant near Homer, Louisiana, after a 7-year effort and \$34 million in costs to LES. This withdrawal was made after the

Commission affirmed in part, reversed in part, and remanded for further proceedings, the Atomic Safety Licensing Board's decision of May 1, 1997, against LES on several environmental justice issues. See also "Adjudicatory Proceedings" in Chapter 1 of this report.

On June 29, 1998, USEC announced its decision to privatize through an initial public offering of securities. The U.S. Treasury Department approved the decision, and USEC was formally privatized on July 28, 1998.

ANALYSIS OF MATERIALS OPERATIONS

Nuclear Material Licensees and Agreement States

The NRC licenses the use of reactor-produced isotopes, the milling of uranium, and the subsequent processing of both natural and enriched uranium, as well as other special nuclear material. The NRC directly regulates licensees in 20 States, the District of Columbia, and the U.S. Territories. The remaining 30 States, known as Agreement States, have entered into agreements with the NRC under Section 274 of the *Atomic Energy Act*, as amended, whereby the NRC relinquishes and the States assume regulatory authority over the use of byproduct materials, source materials, and other special nuclear material in quantities not capable of sustaining a chain reaction.

The NRC collects and reviews nuclear materials event information reported by NRC licensees and Agreement States. NRC licensees submit reports directly to the NRC regional or headquarters offices. Agreement State licensees submit reports to the States, which, in turn, voluntarily transmit summary reports to the NRC under an informal information-sharing agreement. NRC maintains this information in the Nuclear Material Events Database (NMED). In FY 1998, NRC received 770 reports of events involving nuclear materials licensees that were required to be reported, as shown in Table 2.2. None of these events resulted in radiation-related deaths.

Table 2.2 Nuclear Materials Reportable Events Submitted to the NRC and to Agreement States in 1998 by Event Type

Type of Event	Number
Misadministrations	36
Radiation overexposures	11
Loss of control of licensed material	213
Leaking sources	18
Release of material	28
Transportation	37
Equipment problems	170
Fuel cycle facility problems	255
Test, research, and training reactors	2
Total	770

Note: Not all Agreement State reports had been received at the time this table was prepared.

Radiation Exposures and Overexposures

All NRC licensees are required to monitor employee exposure to radiation and radioactive materials at levels sufficient to demonstrate compliance with the occupational dose limits specified in 10 CFR Part 20. Licensees of power reactors and licensees involved in industrial radiography, the manufacture and distribution of radioactive materials, fuel fabrication and processing, low-level radioactive waste disposal, and independent spent fuel storage, are required by 10 CFR 20.2206 to provide to the NRC annual reports of exposure data for individuals for whom personnel monitoring is required. These data are published annually in "Occupational Radiation

Exposure at Commercial Nuclear Power Reactors and Other Facilities" (NUREG-0713). The Radiation Exposure Information Reporting System (REIRS) provides data on exposures and overexposures. You may access REIRS through the Internet at <www.saic.com/home/nrc_rad>.

The number of individuals overexposed in nuclear materials applications typically exceeds the number overexposed at reactor sites. The nonreactor licensees of most concern for overexposures are radiographers. The special radiological problems of industrial radiography have been known for some time, and the NRC has provided guidance, a training document, and a videotape to address those problems. Although the data for FY 1998 have not yet been compiled, there have been no reports of deaths.

Abnormal Occurrences

In the "Report to Congress on Abnormal Occurrences, Fiscal Year 1998" (NUREG-0090, Vol. 21), NRC described five proposed abnormal occurrences (AOs) that were reported by NRC nuclear materials licensees. One event involved a seismic risk at a GDP. Two events involved multiple brachytherapy misadministrations, one involved a radiopharmaceutical misadministration, and one involved an exposure to a minor. The report also addresses one proposed AO, a brachytherapy misadministration at a facility licensed by an Agreement State.

RULEMAKING SUPPORTING NUCLEAR MATERIALS SAFETY

In early FY 1998, the NRC took steps to further improve the effectiveness and efficiency of its rulemaking activities by transferring the rulemaking activities related to materials from the Office of Nuclear Regulatory Research to the Office of Nuclear Material Safety and Safeguards.

Rulemakings promulgated by the NRC in FY 1998 contributed in a significant way to NRC's success

in achieving its performance goals. These rulemakings provided burden relief to licensees and led to improvements in the regulatory framework.

Licensee Burden Reduction

The following rulemakings were promulgated to reduce burden on licensees, which, in turn, allowed licensees to redirect their limited resources to activities that have greater safety significance.

- A proposed rule to shorten or eliminate the 30-day delay for the loading of spent reactor fuel into an Independent Spent Fuel Storage Installation (ISFSI) following completion of preoperational testing;
- A proposed rule (10 CFR Part 76) that applies to such items as certificate renewals and appeals for GDPs to streamline the amendment processes and to make these processes more effective and efficient;
- A final rule to provide criteria that allow qualifying nonprofit entities and nonbond-issuing business corporations to use self-guarantee as an additional mechanism for financial assurance;
- A final rule to exempt canisters holding vitrified waste containing plutonium from the packaging requirement for double containment (10 CFR Part 71);
- A final rule to eliminate the 5-year term for medical use licensees and to set the new terms of up to 10 years, which are the same as the license terms set for other material licensees; however, some licenses may be issued for shorter terms if warranted by the circumstances of license applicants (10 CFR Part 35); and
- A final rule to establish the same regulations for distributing timepieces containing gaseous tritium light sources as is now used for the timepieces containing tritium paint and to remove from the regulations the specific

requirements for prototype testing (10 CFR Part 32).

Improvements in the Regulatory Framework

A draft proposed rule and associated draft Standard Review Plan for 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," which addressed changes requested in petition PRM-70-7 and the public comments received on the petition, were developed by the staff and provided to the Commissioners. In preparing the draft proposed rule and the associated Standard Review Plan, the staff held several public meetings to solicit public comments on the subject. Subsequently, the staff briefed the Commission and held a public meeting to discuss the proposed rule changes. NRC worked on the following initiatives to improve the regulatory framework:

- A proposed rule to expand applicability of requirements dealing with completeness and accuracy of information submitted to NRC to include additional parties, such as holders of and applicants for certificates of compliance and their contractors, subcontractors, and consultants (10 CFR Part 72).
- A proposed rule to correct a number of inconsistencies, clarify the applicability of several sections, and modify the data for submittal of dry cask storage effluent reports (10 CFR Part 72).
- A final rule to extend the requirements of the deliberate misconduct rule to apply to the applicants for NRC licenses, certificates of compliance, and reciprocity (10 CFR Parts 30, 40, 50, 60, 61, 70, and 72).
- A final rule to provide minor clarifications and to revise the monitoring criteria (1) for minors from 0.5mSv (0.05 rem) to 1 mSv (0.1 rem) in a year and (2) for declared pregnant women from 0.5 mSv (0.05 rem) to 1 mSv (0.1 rem) during their pregnancies (10 CFR Part 20).

ENFORCEMENT AND INVESTIGATIVE ACTIONS

See also "New Procedures for License Transfer Applications" in Chapter 1.

Enforcement

The Commission has developed an enforcement program and an Enforcement Policy to support the NRC's overall safety mission in protecting the public and the environment. Consistent with that purpose, enforcement action is used as a deterrent to emphasize the importance of compliance with regulatory requirements, and to encourage prompt identification and prompt, comprehensive correction of violations. The Office of Enforcement (OE) is responsible for managing the Commission's enforcement program. The NRC's enforcement program is addressed in the agency's Enforcement Policy, NUREG-1600, Rev. 1, "General Statement of Policy and Procedure for NRC Enforcement Actions."

Escalated Enforcement Activities

All violations (except minor violations) identified through inspections and investigations are subject to civil enforcement action and may also be subject to criminal prosecution. After an apparent violation is identified, the severity is evaluated in order to determine the appropriate enforcement sanction. Severity levels range from Level I, for the most significant violations, to Level IV, for those of more than minor concern. Minor violations are not subject to formal enforcement action. The NRC considers violations categorized at Severity Level I and II to be very significant, as it does enforcement actions consisting of multiple Severity Level III violations. During FY 1998, the agency issued two Severity Level I violations, five Severity Level II violations, and three multiple Severity Level III actions to materials licensees.

The NRC uses three primary enforcement sanctions: notices of violation (NOVs), civil penalties, and orders. The NRC considers civil penalties, orders, and NOVs, including Severity Level I, II, and III violations, as escalated enforcement actions.

An NOV sets forth one or more violations of a legally binding requirement and normally requires a response from the licensee describing the reasons for the violation, the corrective steps taken or planned, and the date when actions will be complete. During FY 1998, the agency issued 57 escalated NOVs to materials licensees.

A civil penalty is a monetary fine considered for Severity Level III violations and normally assessed for Severity Level I and II violations and knowing and conscious violations of reporting requirements of Section 206 of the *Energy Reorganization Act*. Section 234 of the *Atomic Energy Act (AEA)* provides for penalties of up to \$100,000 per violation per day; but that amount was adjusted by the *Debt Collection Improvement Act of 1996* to \$110,000. During FY 1998, the agency proposed 29 individual civil penalties be imposed on materials licensees. Most licensees pay the civil penalty when it is proposed. However, in some cases, the agency imposes the civil penalty through the issuance of an order. Table 2.3 includes additional civil penalty information. Note that a civil penalty may be proposed in one fiscal year and paid or imposed in another fiscal year.

	FY 98
Number of Proposed Civil Penalties	29
Amount of Proposed Civil Penalties	\$270,600
Amount of Paid Civil Penalties	\$330,350
Number of Imposed Civil Penalties	5
Amount of Imposed Civil Penalties	\$65,650

In addition to NOVs and civil penalties, orders may be used to modify, suspend, or revoke

licenses. Orders may require additional corrective actions, such as removing specified individuals from licensed activities or requiring additional controls or outside audits. Persons adversely affected by orders that modify, suspend, or revoke a license, or that take other actions, may request a hearing. During FY 1998, the agency issued seven orders to materials licensees. In addition, five civil penalty imposition orders were issued.

A predecisional enforcement conference is normally conducted with a licensee or an individual before making an enforcement decision if escalated enforcement action appears to be warranted, and if the NRC concludes that it is necessary or the licensee or the individual requests it. During FY 1998, the agency conducted

a total of 122 conferences for reactor and material licensees.

The NRC issues a press release with a proposed civil penalty or order. All orders are published in the *Federal Register*.

Additional information on the NRC's enforcement program and enforcement activities is available in the OE's Fiscal Year 1998 Annual Report. This document is available in the public document room and on NRC's World Wide Web (WWW) site. The address for OE's Home Page is <<http://www.nrc.gov/OE/>>. This WWW site also contains copies of significant enforcement actions that the agency has issued arranged by reactor, materials, and individual actions.

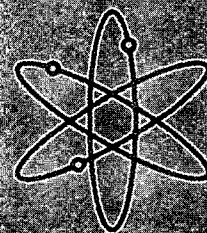
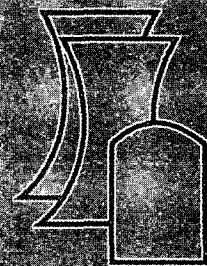
The strategic goal for nuclear waste safety is to prevent adverse impacts to the current and future public health and safety and the environment as a result of uranium recovery, facilities decommissioning, cleanup of contaminated sites, and disposal of radioactive wastes. In Fiscal Year (FY) 1998, the U.S. Nuclear Regulatory Commission (NRC) met the associated performance goal and had no radiation exposures or releases of radioactive material that are likely to occur now or in the future that will have significant adverse impacts on the health and safety of the public and the environment resulting from uranium recovery, facilities decommissioning, cleanup of contaminated sites, and disposal of radioactive wastes. The NRC's target for the FY 1999 performance goal to establish the regulatory framework for high-level waste (HLW) disposal, consistent with current national policy, is to issue a final rule after promulgation of the standard by the end of FY 1999 or early FY 2000.

SPENT FUEL

The Spent Fuel Project Office (SFPO) in the NRC's Office of Nuclear Material Safety and Safeguards was created in April 1995, primarily to review the Department of Energy (DOE) design for a multipurpose canister (MPC) for the transportation, storage, and disposal of spent nuclear fuel. After the creation of SFPO, the MPC program was canceled, and DOE replaced its MPC program with a policy to rely on private-sector development of canisters for transportation and storage. Thus, instead of the review of the technology for a single MPC, the NRC staff is now reviewing technologies for several canisters used for transportation and storage (dual-purpose canisters). Staff reviews of applications for dry cask storage licenses are increasing because practically all of the Nation's nuclear power plants are now seeking (or will seek) licenses for dry cask storage. As nuclear plant spent fuel pools reach capacity, the licensee's capability to offload a full core of fuel rods is reduced.

In addition to reviewing technologies for dual-purpose canisters, the staff is responsible for—

- the licensing and certification of facilities and technologies associated with the safe storage and transportation of spent fuel from the Nation's nuclear utilities;
- the certification of transportation packages for other nuclear materials;



- safety inspections of dry storage and transport package licensees, certificate holders, applicants, designers, and fabricators; and
- the review of quality assurance (QA) programs for the fabrication and use of transportation packages.

Thus far, the NRC has approved 13 designs for spent fuel storage under the use of either a general license or as part of a site-specific license, and it has certified two cask designs for the transport of spent nuclear fuel. Figure 3.1 shows the locations of the currently operating independent spent fuel storage installations (ISFSIs) and the spent fuel storage technologies associated with each facility, while Figure 3.2 shows the locations of the potential near-term ISFSI sites. In general, the SFPO staff maintains oversight of its licensed and certified entities through licensing reviews and safety inspections.

The NRC received 36 applications for spent fuel storage and transportation package designs and facilities and completed 35 of these applications in FY 1998, including an ISFSI license for North Anna. Separately, the staff completed its technical review for the Holtec HI-STAR storage cask and approved the MP-187 transportation package. The NRC also received 103 applications for transportation package designs for other radioactive materials and completed the review and approval of 96 applications in FY 1998. The staff also accomplished the following activities during FY 1998:

- Issued dual-purpose dry cask review schedules to all vendor applicants. These technical reviews are either on schedule or are being changed at the applicant's request.
- Continued to review the Trojan reactor vessel shipment application and issued the approval package in October 1998 for the Commission's consideration, using risk-based information to support the package approval.
- Issued the scoping report for the environmental impact statement associated with the Private Fuel Storage, Limited Liability Corporation, application for an ISFSI located on the Skull Valley Band of Goshute Indian Reservation in Tooele County, Utah, on September 16, 1998.

The NRC is involved with DOE in various licensing, certification, and inspection-related activities. For example, the NRC's DOE-related licensing, certification, or inspection-related projects include—

- Fort St. Vrain ISFSI license transfer review;
- Three Mile Island Unit 2 (TMI-2) fuel debris ISFSI licensing review;
- Non-site-specific central interim storage facility topical safety analysis report review; and
- Dry Transfer System topical safety analysis report review.

During this fiscal year, the staff continued its involvement with DOE in the return of foreign research reactor spent nuclear fuel, including transportation package certifications, route approvals, and inspection of shipments.

To complement the licensing and certification reviews, NRC developed and implemented an inspection program to monitor the performance of storage and transportation certificate holders and licensees. During FY 1998, the staff monitored the industry's progress on resolving the problems of cracks in the closure welds for the VSC-24 cask design. Inspectors observed the demonstration of a new nondestructive examination technique used for assessing the condition of the VSC-24 cask closure weld. Inspectors also observed the initial implementation of an improved weld process on the VSC-24 cask closure welds at the Arkansas Nuclear One, Point Beach, and Palisades power plants. These observations, coupled with a review of the capabilities of the new nondestructive technique, ultimately led to the lifting of the confirmatory action letters previously issued to Sierra Nuclear (now BNFL Solutions) and the three power plants using the VSC-24 cask system to allow resumption of fuel loading in the VSC-24 casks. The NRC also continued to assess industry responses to NRC Bulletin 97-02, "Puncture Testing of Shipping Packages Under 10 CFR Part 71." Inspectors noted that several certificate holders experienced the same problems as those discussed in the bulletin and that appropriate corrective actions were being taken. During FY 1998, the staff developed guidance resulting in the issuance, in January 1999, of a generic communication to existing certificate

Prairie Island
TN-40 (7)

GE Morris
**

Point Beach
VSC-24 (2)

Palisades
VSC-24 (13)

Davis Besse
NUHOMS-24 P (3)

North Anna
TN-32

Calvert Cliffs
NUHOMS-24P (18)

Surry
Castor V/21 (25)
Castor X/33 (1)
MC-10 (1)
NAC-128 (2)
TN-32 (6)

H.B. Robinson
NUHOMS-7P (8)

Oconee
NUHOMS-24P (40)

Arkansas
VSC-24 (5)

Fort St. Vrain
MVDS (244)

- △ = Site-Specific License
- = General License
- (#) = Number of Loaded Casks

MVDS - Modular Vault Dry Storage
 TN - Trans Nuclear
 VSC - Ventilated Storage Cask
 NAC - Nuclear Assurance Corp.
 NUHOMS - Nutech Horizontal Modular Storage System
 WNP - Washington Nuclear Power Plant

**GE Morris uses wet storage

Information as of January 7, 1999

Figure 3.1 Operating Spent Fuel Storage Sites (ISFSI)

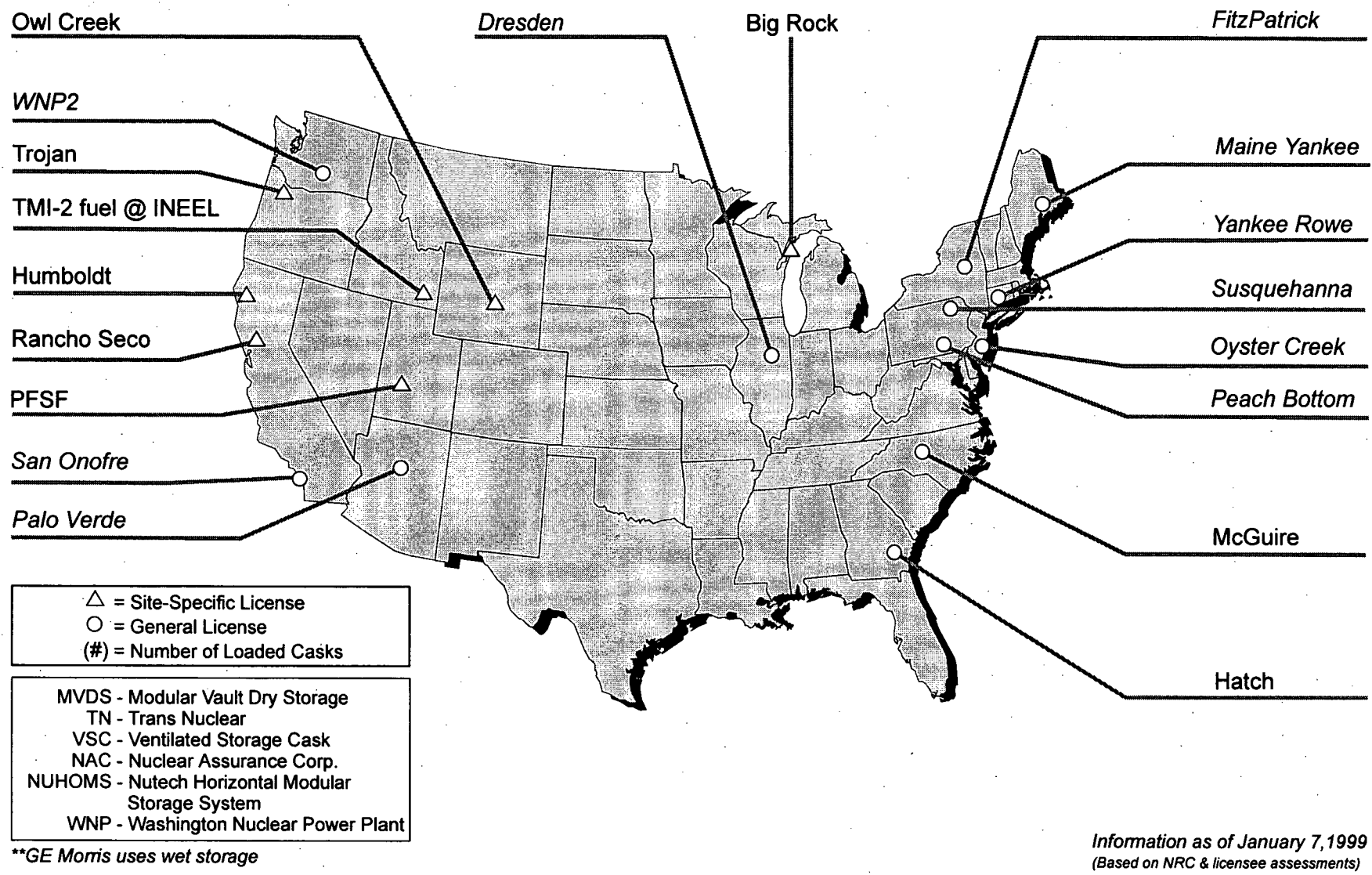


Figure 3.2 Potential Near-Term, New ISFSI Sites

holders. Finally, the inspection staff completed 18 inspections and 60 QA reviews of dry storage and transport licensees, applicants, designers, and vendors, a number of which resulted in significant inspection findings.

Annual exposure data for NRC's ISFSI licensees is given in REIRS. You can access REIRS through the Internet at <www.saic.com/home/nrc_rad>. See Chapter 2 of this report for additional information about radiation exposure.

PILOT PROGRAM FOR DEPARTMENT OF ENERGY NUCLEAR FACILITIES

In FY 1998, the NRC and the DOE jointly conducted a pilot program to provide DOE and NRC information for determining the desirability of NRC's regulatory oversight of DOE nuclear facilities and to support a decision on whether to seek legislation to authorize NRC's regulation of DOE nuclear facilities. The pilot program was established to test regulatory concepts for at least six DOE facilities over 2 years by evaluating the pilot facilities and their standards, requirements, procedures, practices, and activities against the standards that NRC believes would be appropriate for each of these types of facilities.

The NRC conducted three pilot projects in FY 1998 for the following facilities:

1. Lawrence Berkeley National Laboratory;
2. Radiochemical Engineering Development Center at the Oak Ridge National Laboratory; and
3. Receiving Basin for Offsite Fuel at the Savannah River Site.

In general, NRC found that under the existing regulatory framework, NRC could resolve most of the technical, policy, and regulatory issues that the NRC staff encountered and that precedent for resolving many of these issues was in existing NRC policy and practice. Each of the first three sites could be licensed by NRC and continue to operate with very few changes. Two of the three facilities

evaluated during the pilot project were stand-alone facilities at a complex site, and NRC determined that it would be impractical to license these individually without licensing the whole site because of their dependence on the shared-site infrastructure for many of the key elements of safe operation. Additionally, safeguards was an issue at these two facilities. The interfaces, relatedness, and associated risks among the safety, safeguards, and security programs should continue to be reviewed as part of the Pilot Program.

HIGH-LEVEL WASTE

The NRC's HLW regulatory activities are mandated by the *Nuclear Waste Policy Act of 1982* (NWP), the *Nuclear Waste Policy Amendments Act of 1987*, and the *Energy Policy Act of 1992* (EnPA). The NWP specifies a detailed approach for the long-range undertaking of HLW disposal, giving the DOE operational responsibility and the NRC regulatory responsibility for HLW disposal. The *Nuclear Waste Policy Amendments Act* directs DOE to characterize only one candidate site, the Yucca Mountain site in the State of Nevada. Accordingly, NRC's activities are focused on Yucca Mountain. In the EnPA, Congress directed the U.S. Environmental Protection Agency (EPA) to issue final environmental standards that are "based on and consistent" with the 1995 findings and recommendations of the National Academy of Sciences. Once final EPA standards are established, NRC must modify its technical requirements and criteria under Section 121(b) of the NWP (i.e., 10 CFR Part 60) to be consistent with the new EPA standards. To issue final regulations within the short time allotted by EnPA, NRC completed a strategy for a site-specific rulemaking (SECY-97-300) in parallel with the ongoing development of the EPA's new standards for Yucca Mountain. This rulemaking will ensure that DOE will have the necessary regulation for preparing its license application for an HLW repository. Finally, a proposed rule, 10 CFR Part 63, was prepared for the Commission's approval (SECY-98-225). The Advisory Committee on Nuclear Waste (ACNW) worked closely with the NRC staff to formulate this risk-informed site-specific rule for the Yucca Mountain HLW repository.

In FY 1998, the NRC continued its refocused HLW program (1) to resolve, at the staff level, the Key Technical Issues (KTIs) most important to repository performance and (2) to give DOE feedback before the publication of its viability assessment (VA) for the Yucca Mountain site. Eventually, the KTIs will be used to develop the Yucca Mountain Review Plan. Issue Resolution Status Reports (IRSRs) are the primary mechanism for documenting issue resolution and they include acceptance criteria that are the bases for determining resolution at the staff level. The ACNW provided technical insights to the NRC staff during the development of the issue resolution process. In FY 1998, the staff completed initial development of IRSRs for eight issues:

1. Unsaturated and Saturated Flow under Isothermal Conditions,
2. Thermal Effects on Flow,
3. Evolution of the Near-Field Environment,
4. Structural Deformation and Seismicity of the Yucca Mountain Site,
5. Repository Design and Thermo-mechanical Effects,
6. Container Life and Source Term,
7. Igneous Activity, and
8. Total System Performance Assessment (TSPA) and Integration.

In addition to preparing the IRSRs in FY 1998, the NRC staff's technical exchanges with DOE contributed to issue resolution by—

- presenting the staff's preliminary analysis of DOE's TSPA-VA methodologies and results to DOE and the Nuclear Waste Technical Review Board;
- completing development of and preparing user's manuals for NRC's Total Performance Assessment Codes 3.1 and 3.2. These codes are used to perform KTI-level and system-level performance sensitivity studies and will be used to support review of the VA and evaluation of the license application; and

- increased NRC monitoring of DOE's implementation of its QA Program with four performance-based observation audits and director-level NRC/DOE meetings. These audits and meetings led to identification of a major concern with implementation of DOE's QA program. Subsequently, NRC agreed with DOE on a corrective action plan.

Finally, for performance assessment, the NRC completed KTI-level and system-level sensitivity studies to assess the relative importance of technical issues to performance. The results of these studies will allow the staff to have a quantitative, risk-informed basis with which to prioritize issues, allocate resources, and improve the technical basis for review.

LOW-LEVEL WASTE

Nuclear waste is a byproduct of the use of radioactive materials. Low-level radioactive waste results from reactor operations and from medical, academic, industrial, and other commercial uses, and this waste generally contains relatively limited concentrations of radioactivity. The *Low-Level Radioactive Waste Policy Act of 1980*, amended in 1985, made States responsible for providing for the disposal of commercial low-level waste (LLW) generated within their borders. The act encouraged States to enter into compacts that would allow several States to dispose of waste at a regional disposal facility. Most of the States have entered into compacts, and several States are proceeding with plans to construct and operate new disposal facilities. Although some compact disposal facilities have been planned, none has been opened with the exception of the Envirocare facility in Clive, Utah, which accepts only certain categories of LLW. Regulatory responsibility for special nuclear materials at the Barnwell and Hanford disposal sites was transferred to the States of South Carolina and Washington, respectively. Consistent with its goals, the NRC continues to provide support to the Agreement States. During FY 1998, NRC activities in the LLW program were limited to consultation with States, review of an Envirocare license application, and technical assistance to State regulatory agencies.

Annual exposure data for NRC's LLW licensees is given in REIRS, which you may access through the Internet at <www.saic.com/home/nrc_rad>.

REACTOR AND SITE DECOMMISSIONING

The Decommissioning Program encompasses the regulation of decontamination and the decommissioning of power reactor, fuel cycle facility, and materials licensees. This program includes the—

- development of associated regulation and guidance;
- review of site characterization plans for complex cases;
- review and approval of decontamination and decommissioning plans;
- development of environmental assessments and environmental impact statements associated with these reviews;
- regulatory oversight of decommissioning actions;
- review of final survey reports;
- conduct of selected confirmatory surveys;
- termination of licenses; and
- development of policy to ensure efficient and consistent licensing actions.

In 1998, the NRC implemented a transition from the Site Decommissioning Management Plan (SDMP) to a comprehensive decommissioning program. The major components of the comprehensive decommissioning program are to—

- maintain the SDMP site list to track progress at complex decommissioning sites;
- shift decommissioning issue resolution from the SDMP to the Agency Operating Plan;

- develop a standard review plan and a regulatory guide to implement the license termination rule; and
- phase out or revise existing SDMP guidance documents to be consistent with the license termination rule.

For material decommissioning, in FY 1998, consistent with the goal to remove three sites from the SDMP each year, NRC succeeded in removing three sites from the SDMP: Cabot Corporation, Boyertown, Pennsylvania; Clevite, Cleveland, Ohio; and Schott Glass Technologies, Duryea, Pennsylvania. For reactor decommissioning, the NRC issued draft guides for comment entitled "Regulatory Guide on the Format and Content of Nuclear Reactor License Termination Plans" and a "Standard Review Plan (SRP) for Evaluating Nuclear Power Reactor License Termination Plans." These documents are being developed to ensure the quality and uniformity of licensee submittals and NRC reviews. The final regulatory guide will be issued in 1999.

NRC also began a pilot study to facilitate decommissioning of materials sites by reducing the submittal and review processes. In March 1998, NRC conducted a public workshop to explain this streamlining initiative. The purpose of streamlining, in addition to accomplishing health and safety review objectives, is to complete a licensing decision in a time period that meets the licensee's needs. This process is intended to facilitate reviews and licensing decisions in accordance with schedules defined and agreed upon by both the licensee and NRC. The March 1998 workshop was attended by NRC licensees and representatives of industry, the media, and the NRC. Following this workshop, five stakeholders agreed to participate in the pilot study.

During FY 1998, NRC participated in a Citizen Task Force (CTF). The CTF was formed by the New York State Energy Research and Development Administration with the participation of DOE to assist in developing a preferred alternative for the completion of the West Valley Demonstration Project (WVDP) and closure of the site. The CTF met two evenings per month from January 1997 to June 1998 to learn about the site and to discuss the various alternatives for completion of the WVDP and

closure of the site. NRC, as a cooperating agency in the West Valley Environmental Impact Statement, participated in these meetings by making periodic presentations and by a video teleconference to discuss NRC's activities and responsibilities under the *WVDP Act*.

During FY 1998, NRC participated in public meetings concerning decommissioning of nuclear power plant facilities and sites listed in the Site Decommissioning Management Plan (SDMP). These meetings included decommissioning of the Enrico Fermi Atomic Power Plant, Unit 1, Monroe, Michigan; the Peach Bottom Atomic Power Station, Unit 1, Delta, Pennsylvania; and the Babcock and Wilcox site, Parks Township, Pennsylvania. NRC attended a seminar by Nuclear Risk Management for Native Communities to inform Native Americans of the current state of decommissioning the Sequoyah Fuels Corporation (SFC) Fuel Cycle Facility in Gore, Oklahoma. NRC observed a public meeting at the SFC Facility in conjunction with site visits to the Fansteel, Inc., plant in Muskogee, Oklahoma, and the Kaiser Aluminum Specialty Products site in Tulsa, Oklahoma.

In March 1998, NRC conducted a public workshop to explain a streamlining initiative to facilitate decommissioning of materials sites by reducing the submittal and review processes. The workshop was attended by NRC licensees and representatives of industry, the media, and NRC. Following this workshop, five stakeholders agreed to participate in the pilot study.

In support of developing guidance for implementing the final rule on "Radiological Criteria for License Termination," NRC organized a 2-day public workshop on review of dose modeling methods. The workshop presenters discussed dose modeling needs for licensing reviews, development of guidance related to dose modeling and parameter selection, and the EPA dose assessment model. Computer demonstrations of the dose codes were also provided to the attendees, who included representatives of Agreement States, industry, consultants, national laboratories and Federal agencies, and interested members of the public. A report of the workshop proceedings (NUREG/CP-0163) was published, which outlines the presentations made during the workshop and

addresses questions raised during the panel discussions. The workshop and the NUREG-series report are useful to participants because they were designed to provide technical bases and discussions to support development of the decommissioning guidance.

URANIUM RECOVERY LICENSING AND INSPECTION

The NRC's uranium recovery program licenses and regulates uranium recovery facilities, which extract or concentrate, and thus recover, uranium from uranium ores. Historically, uranium recovery was performed at conventional uranium mills, which process uranium ore obtained from open pit or underground mines. At the mill, the ore is crushed and chemically processed to produce uranium as yellowcake. After processing, the remainder of the ore, called uranium mill tailings, still contains hazardous and radioactive substances and is disposed in a tailings pile.

Most newer uranium recovery facilities use an *in situ* leach (ISL) process. At ISL facilities, wells are drilled into the rock formations containing the uranium ore. Water, with chemical additives, is injected into the wells to dissolve the uranium into the water. The water is then pumped back to the surface, where a processing plant removes the uranium to produce yellowcake.

NRC's uranium recovery regulatory activities, are mandated by the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), as amended. Title I of UMTRCA applies to 24 abandoned uranium mill tailings sites. Title I directs the DOE to clean up surface contamination and ground water contamination at these sites, and to stabilize the tailings at disposal sites for up to 1000 years. UMTRCA also requires that NRC review and evaluate DOE's remedial action plans for the cleanup and disposal of contaminated materials at these sites and that NRC concur that DOE has completed each remedial action to meet standards set by the EPA. The completed disposal sites are licensed to DOE by the NRC for long-term care. Congress mandated that the DOE complete the

surface remediation of the sites by September 30, 1998.

One of NRC's uranium recovery performance measures for FY 1998 was to review DOE plans and actions for Title I sites to fulfill the Congressionally mandated completion date. During FY 1998, NRC concurred in construction completion at 2 of the DOE sites, and licensed 4 disposal sites to DOE for long-term care. This meant that by the end of FY 1998, NRC had concurred in all remedial actions submitted by DOE, leaving 3 sites remaining for DOE to complete. Final completion of one site, the Grand Junction disposal site, will not occur until 2023, so that the site remains open to accept disposal of tailings from other locations. Activities for the groundwater remediation phase, which are not subject to the 1998 deadline for the surface remediations, also continued during FY 1998. In FY 1998, NRC concurred with DOE's plans for groundwater remediation for 5 sites.

Under Title II of UMTRCA, NRC's uranium recovery program is responsible for the licensing and regulation of (1) operations at uranium recovery facilities (mills and ISLs), (2) reclamation and disposal of uranium mill tailings, and (3) decommissioning of uranium recovery facilities.

In FY 1998, there were 26 NRC-licensed uranium recovery facilities in the Title II program. Of these, 1 conventional mill was operating, 2 mills were in standby, and 14 mills and 1 heap leach site were in various stages of decommissioning and reclamation. There were also 6 commercial ISL facilities, 1 disposal facility for tailings received from other sites and 1 nonoperational ion exchange facility. During FY 1998, NRC completed the review of the application for a new ISL facility, and issued this facility a performance-based license. Also during FY 1998, NRC reviewed the operating history and the safety and environmental aspects of 2 operating ISL facilities and issued these facilities performance-based, renewed licenses. In addition, NRC reviewed and concurred with 4 plans for site reclamation. The NRC performed over 30 inspections at licensee facilities to evaluate licensee programs and regulatory compliance.

RESEARCH SUPPORTING NUCLEAR WASTE SAFETY

Research in the area of nuclear waste safety is focused on improving the regulatory framework and reducing unnecessary burden on licensees in the area of assessing the performance of waste disposal and storage, contaminated site cleanup, uranium recovery operations, and decommissioning activities. Some current assessment techniques use overly simplistic or conservative assumptions to account for uncertainties and to ensure that dose estimates are conservative in order to adequately protect public health and safety. Research is focused on improving supporting data, reducing uncertainties, and providing more realistic models of natural processes that control the movement of radionuclides in the environment. This work is applicable most effectively at complex sites with large radionuclide inventories where the simple approaches dictate extraordinary actions to achieve compliance with regulatory standards. In 1998, the most significant accomplishments of the program included the following activities.

In FY 1998, the research was completed on the analysis of single- and cross-hole pneumatic tests in unsaturated fractured rock at the Apache Leap Research Site (reported in NUREG/CR-5559). This work, conducted by the University of Arizona, provided significant insights into the processes that will be important to assessing performance of an HLW repository at Yucca Mountain, Nevada. Field activities related to testing and evaluating ground water monitoring strategies at the University of Arizona's Maricopa site were also completed. Information, including the technical bases, was provided to the NRC licensing staff, Agreement State regulators and their consultants, the U.S. Geological Survey, and DOE scientists through two workshops. One workshop was a "hands-on" technology transfer workshop, which was held at the Maricopa site, and the second workshop was a "lessons-learned" workshop held at NRC headquarters.

Work was completed on the interagency cooperative agreements with the Agricultural Research Service (U. S. Department of Agriculture), the U.S. Geological Survey, and the National Institute of Standards and Technology

(NIST). An intergovernmental agreement with the Johns Hopkins University was also completed to combine and share resources and improve the efficiency of NRC research in specific areas. These activities have resulted in a significant increase in staff research activities as direct contract funds have decreased. The cooperative work with the Agricultural Research Service deals with field testing of infiltration instrumentation methods and analyses for ground water movement in the unsaturated zone. The cooperative research with the U.S. Geological Survey involves the application of mechanistic models of sorption processes to radionuclide transport in the environment. In 1998, a uranium-contaminated field site with complex chemistry (Naturita, Colorado) was selected by the NRC and the Survey for a demonstration project on the application of mechanistic models to performance assessment. The cooperative research with NIST deals with the verification and testing of 4SIGHT, a computer code developed by NIST. This code is intended to predict degradation of concrete barriers over time. In 1998, staff from the NRC and NIST collected weathered samples of concrete on which laboratory analyses will be performed to quantify degradation rates of concrete under environmental conditions. The intergovernmental agreement with the Johns Hopkins University is to characterize and quantify the degradation rates for contaminated slags. The contemporary slags were collected from three sites in Pennsylvania and ancient slags (200 to 1500 years old) were collected from archeological sites in mining districts in the Czech Republic and the United Kingdom.

The "in-house" research on remediation of in situ leach uranium mines to determine "pore volumes" necessary to achieve cleanup standards continued.

The investigation continued on (a) the radionuclide source terms and scaling factors from activated metals and ion-exchange resins obtained from nuclear power stations, (b) determining solubilities and leaching properties of radionuclides in slags and soils as a function of chemical parameters (e.g., pH), (c) radionuclide-chelating complex behavior from decontaminated reactor component leachates. The staff completed field lysimeter studies involving field testing of cement and vinyl-ester waste form behavior and

radionuclide releases to soils under actual environmental conditions and presented their findings at the Waste Management '98 Symposium. These findings from the research were published in a report (NUREG/CR-6569).

The NRC developed a technology transfer and training course on a newly developed dose assessment code, "MEPAS within FRAMES." The course was held at the NRC headquarters computer training facility for EPA, DOE and DOE's national laboratories, and NRC licensing staff working on decommissioning reviews.

See also "Licensee Burden Reduction" in Chapter 2 for two rules related to waste.

ADVISORY COMMITTEE ON NUCLEAR WASTE

The NRC established the Advisory Committee on Nuclear Waste (ACNW) in 1988. The ACNW reports to and advises the NRC on nuclear waste disposal facilities as directed by the Commission; by "Disposal of High-Level Radioactive Wastes in Geologic Repositories" (10 CFR Part 60), "Licensing Requirements for Land Disposal of Radioactive Waste" (10 CFR Part 61), a proposed part, "Disposal of High-Level Radioactive Wastes in a Proposed Geological Repository at Yucca Mountain, Nevada" (10 CFR Part 63), published in the *Federal Register* on February 22, 1999 (64 FR 8639-8679), and other applicable regulations; and by legislative mandates such as the NWPA, the *Low-Level Radioactive Waste Policy Act*, and the *Uranium Mill Tailings Radiation Control Act*, as amended. In performing its work, the committee will examine and report on those areas of concern referred to it by the Commission and may undertake studies and activities on its own initiative, as appropriate.

ACNW reports, other than those that may contain classified material, are made part of the public record. The ACNW Web address is <<http://www.nrc.gov/acrsacnw>>. Activities of the committee are conducted in accordance with the *Federal Advisory Committee Act*, which provides for the public to attend and participate in committee meetings. The ACNW membership is drawn from

scientific and engineering disciplines and includes individuals experienced in geosciences, risk assessment, radioactive waste treatment, environmental engineering, and nuclear engineering.

The following reports were among the most important ACNW contributions during FY 1998:

- | | | | |
|----------|---|----------|---|
| 03/06/98 | NRC High-Level Waste Issue-Resolution Process and Issue-Resolution Status Reports | 06/19/98 | ACNW Comments on NRC's Review of the DOE Viability Assessment |
| 03/26/98 | Risk-Informed, Performance-Based Regulation in Nuclear Waste Management | 07/29/98 | Comments on NRC's Total System Sensitivity Studies for the Proposed High-Level Radioactive Waste Repository at Yucca Mountain, Nevada |
| | | 09/09/98 | Issues and Recommendations Concerning the Near-Field Environment and the Performance of Engineered Barriers at Yucca Mountain |

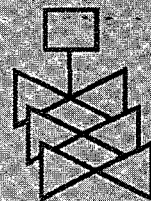
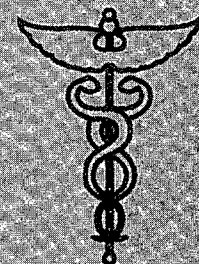
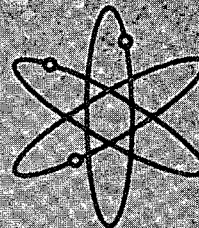
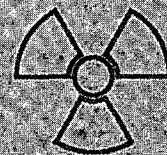
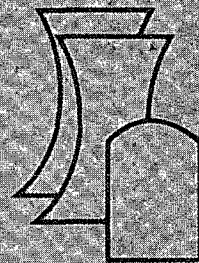
International Nuclear Safety Support

The strategic goal for international nuclear safety support is to support U.S. national interests in the safe and secure use of nuclear materials and in nuclear non-proliferation. In Fiscal Year (FY) 1998, the U.S. Nuclear Regulatory Commission (NRC) met the associated performance goal to strengthen international nuclear safety and safeguards through leadership and participation in international nuclear policy formulation and exchange activities by providing assistance through international agreements and to support nuclear non-proliferation interests through export and import licensing and other activities.

GENERIC INTERNATIONAL PARTICIPATION

The NRC participates in a broad program of international activities, based on statutory requirements, U.S. Government obligations and commitments, international treaties and agreements, Executive Orders and Presidential Decision Directives, and Commission policy and guidance. These activities contribute to improving the safety and security of NRC licensed facilities in the United States, enhancing U.S. national security, supporting U.S. foreign policy objectives, and demonstrating U.S. reliability as a supplier of goods and services. In support of these efforts, NRC—

- licenses imports and exports of nuclear facilities, equipment, material, and related commodities, and provides technical support for U.S. nuclear nonproliferation activities;
- maintains some 34 arrangements and letters of agreement signed with counterpart foreign national regulatory organizations that ensure prompt notification of safety problems warranting action or investigation, and provide for limited bilateral cooperation and information and personnel exchanges on nuclear safety, safeguards, waste management and radiological protection, as well as more than 60 joint international safety research agreements;
- contributes to the implementation of national nuclear policy by supporting Presidential summits, Vice Presidential commissions, and interagency nuclear safety and nonproliferation activities that are directed by the Executive Branch;
- improves understanding by informing foreign and international organizations of NRC's most recent regulatory policies and practices through visits, information exchanges, and assignments of



foreign regulatory personnel to the NRC and by obtaining information on foreign regulatory approaches and operational experience that helps to improve NRC's domestic nuclear regulation;

- participates and takes a leadership role in standing committees and senior advisory groups of the International Atomic Energy Agency (IAEA) and the Organization for Economic Cooperation and Development's Nuclear Energy Agency (OECD/NEA) on issues such as safeguards application, standards development, training, technical assistance, physical protection of nuclear materials, reactor safety research and regulatory matters, radioactive materials safety radiation protection, risk assessment, waste management, and transportation;
- facilitates the implementation of IAEA Safeguards Agreement with respect to those licensee facilities selected by the IAEA for the implementation of safeguards measures and provides support to the strengthening of international safeguards and nonproliferation efforts;
- assists in the development of international legal instruments establishing the basis for a global nuclear safety culture;
- plays a leading role in the activities of the International Nuclear Regulators Association (INRA); and
- supports U.S. and international activities concerning the Year 2000 computer problems.

EXPORT CONTROL AND NON-PROLIFERATION

In FY 1998, the NRC completed 90 export license cases. Most of the new casework involved exports of low-enriched uranium to Japan, South Korea, Taiwan, and Western Europe for use as fuel in nuclear power reactors. In addition, there were two export authorizations to supply high-enriched uranium target material to Canada for medical isotope production. Other notable actions

included export authorizations for a 10 MWt TRIGA Research Reactor to Thailand and reactor components to China via Canada. The NRC reviewed nine Department of Energy (DOE) subsequent arrangement proposals, including a request from Argentina to recover and use U.S.-supplied unirradiated highly enriched uranium for medical isotope production. Finally, NRC also reviewed 17 nuclear technology transfer cases that DOE is considering for approval. A number of these requests concerned the transfer of nuclear power reactor technologies and services to China to assist the civilian nuclear power program in the wake of the implementation of the U.S.-China Agreement for Cooperation in the Peaceful Uses of Nuclear Energy and the lifting of sanctions on nuclear-related commerce.

NRC participated in the March 1998 Nuclear Suppliers Group (NSG) Plenary in Scotland, where working groups were established to initiate open-ended consultations on legal and technical issues relating to intangible technology transfer, and on implementation and policy issues. Latvia was welcomed as a new NSG member. The group decided to hold a second Seminar on the Role of Export Controls in Nuclear Non-Proliferation in New York in the spring of 1999, before the Nuclear Non-Proliferation Treaty (NPT) Preparatory Committee meeting.

In FY 1998, the Commission was consulted and gave its formal views to the President and the Department of State (DOS) on proposed nuclear trade and cooperation agreements with Kazakhstan, Romania, and Ukraine.

The NRC participates in a range of U.S. inter-agency and international nuclear non-proliferation activities. Perhaps most important are the contributions NRC makes toward aiding the United States to meet its export control and technology transfer obligations under Article IV of the Nuclear Non-Proliferation Treaty, including support for bilateral and IAEA-sponsored exchanges of equipment, materials, and scientific and technological information on the peaceful uses of nuclear energy. NRC staff also provided technical assistance to U.S. policy makers in connection with the U.S.-Russia agreement to make permanent the cessation of plutonium production for nuclear weapons; the U.S.-Russia-IAEA Trilateral Verification Initiative on excess weapons material; the process of making decisions

of how to dispose of plutonium excess to U.S. weapons program needs (e.g., safe storage, long-term disposal or use as mixed oxide fuel in commercial power plants); and the Fissile Material Cutoff Treaty. NRC is also represented on the Nonproliferation Steering Committee, which coordinates and shapes U.S. Government-wide activities.

The NRC is also responsible for meeting obligations under Bilateral Agreements for Peaceful Nuclear Cooperation. In meeting these obligations, the NRC must respond to requests for information on the imported or obligated nuclear materials submitted by the bilateral agreement partner.

Over 200 facilities licensed by the NRC have been placed on the list of U.S. Facilities Eligible for IAEA Safeguards. From this list, the IAEA currently has selected six facilities: one for inspection and reporting of accounting data (BWX Technologies downblending facility) and five for the reporting of accounting data (the five LEU fuel fabricators). During IAEA inspections of licensee facilities, the NRC accompanies the inspectors to ensure that the inspector's requests are within the scope of the Safeguards Agreement and to facilitate the accesses and transfers of information necessary for the inspector to accomplish the inspection. The NRC also ensures that the licensee information is properly submitted for electronic transfer to the IAEA's Headquarters in Vienna, Austria. NRC staff routinely meet with representatives from the IAEA to resolve problems associated with IAEA safeguards implementation.

The NRC participates on the following U.S. government interagency committees for the implementation and strengthening of IAEA safeguards:

- the IAEA Steering Committee, which is a senior management-level committee that establishes U.S. government policy on IAEA issues;
- the Subcommittee on International Safeguards and Monitoring, which is responsible for addressing and recommending policy solutions to international safeguards issues;

- the Subgroup on IAEA Safeguards in the United States, which is responsible for addressing issues related to IAEA safeguards implementation in the U.S. (this committee is chaired by the NRC); and
- the Subgroup on Safeguards Technical Support, which is responsible for providing technical assistance to the IAEA through providing personnel with needed technical expertise and development of new safeguards technologies.

The dominant issue currently before the inter-agency safeguards committees is the development of systems and procedures for implementing the new Additional Protocol to the U.S.-IAEA Safeguards Agreement. This protocol was signed in May 1998 and is being prepared for submittal to the Senate for Advice and Consent. The protocol will provide additional legal authority to the IAEA for implementing the safeguards strengthening measures to assure the accuracy and completeness of State declarations. The United States provides the largest share of voluntary technical support and financial assistance to the IAEA of any IAEA Member State.

In support of its program to ensure that effective physical protection arrangements are provided for U.S.-supplied special nuclear materials in other countries, the United States participates with other U.S. government agencies in physical protection information exchange trips for the purpose of discussing and observing other physical protection programs. During FY 1998, bilateral physical protection visits were made to Denmark, Austria, Germany, South Africa, and the Netherlands. In addition, representatives from Japan and Germany accompanied NRC staff to observe Physical Protection Performance Evaluation Reviews at U.S. facilities.

To further support strengthening of international physical protection practices, NRC co-chaired IAEA's working group responsible for revising the IAEA's physical protection guidance document, which serves as the international criteria for acceptable physical protection programs. An NRC staff member participated in IAEA's "International Physical Protection Advisory Service" (IPPAS) mission to Poland, along with representatives from the United Kingdom, France, and Germany.

International Nuclear Safety Activities

NRC currently participates in 34 arrangements with foreign national regulatory authorities, which provide the framework for most of NRC's bilateral cooperation and assistance activities. During FY 1998, NRC entered into a new classified information exchange arrangement with Canada, and renewed standing general information exchange and cooperation arrangements with China, Greece, Indonesia, Israel, Japan, and The Netherlands. NRC also implements an on-the-job training program for assignees from other countries, usually from their regulatory organizations, operating under the aegis of the bilateral information exchange arrangements. During FY 1998, eight people from China, France, Japan, the Republic of Korea, Spain and Switzerland participated in the program.

The NRC conducts confirmatory regulatory research in partnership with nuclear safety agencies and institutes in more than 25 countries. Much of this activity is concentrated in four major subject areas: (1) severe accident research; (2) thermal/hydraulic code maintenance and assessment; (3) probabilistic risk assessment; and (4) steam generator tube integrity. These international research agreements provide for shared use of facilities, joint funding arrangements, prompt exchange of experimental results, coordinated analyses, and other forms of cooperation to yield confirmatory safety data of mutual benefit in a timely and cost-effective manner.

Implementation of U.S. Policy on Nuclear Assistance

NRC continued its active involvement in support of the three nuclear safety institutions that have emerged from the annual Group of Seven (G-7) economic summits: the G-7 Nuclear Safety Working Group (NSWG), the Group of Twenty-four Nuclear Safety Coordination mechanism (G-24 NUSAC), and the Nuclear Safety Account at the European Bank for

Reconstruction and Development (EBRD/NSA). In each of these groups, NRC provides important technical advice and policy guidance in framing U.S. nuclear safety proposals and evaluating those of other governments, especially activities involving regulatory assistance.

In FY 1998, the NSWG continued to work to effectively implement the Memorandum of Understanding (MOU) with Ukraine, which provides for closure by the year 2000 of the four-unit Chernobyl nuclear power plant. A key element in the MOU has been stabilization of the deteriorating sarcophagus entombing Unit 4, with a goal to transform the sarcophagus to a safer and more environmentally stable condition. At a cost of \$750 million and covering 22 integrated tasks, work under the Shelter Implementation Plan (SIP) began in the fall of 1997 and is scheduled to be completed in 2005. A dedicated fund was established at the EBRD to finance sarcophagus improvement activities. This fund, which is separate from the Nuclear Safety Account, solicits contributions from both public and private donors. The Ukrainian Nuclear Regulatory Authority (NRA) will play a key role in the realization of the SIP, most notably in the creation of criteria to implement shelter improvements.

Since 1992, the G-24 NUSAC has coordinated safety assistance programs worldwide for the countries of the former Soviet Union (FSU) and Central and Eastern Europe (CEE). In March 1998, NRC attended the G-24 NUSAC Plenary Committee meeting. NRC has also been actively involved in efforts to restructure the G-24 NUSAC coordination process, reflecting the maturity and experience that has been gained since 1992.

The EBRD/NSA is a supplementary multilateral mechanism to address immediate operational safety and technical safety improvement measures at the least-safe Soviet-design reactors not covered by bilateral programs. Administered by a steering body of representatives from the 15 donor countries, the NSA is coordinated with and assisted by the G-24 NUSAC and is managed by the EBRD. In FY 1998, the NSA and the Government of Ukraine began implementation of the grant agreement signed in 1997 for approximately \$125 million in assistance to support the Chernobyl plant closure initiative. Other NSA projects include \$30 million for safety

upgrades and improvements at the Bulgarian Kozloduy nuclear power plant; approximately \$50 million for safety upgrades and improvements and the conduct of a safety assessment at the Lithuanian Ignalina plant; and approximately \$70 million for safety upgrades and improvements at the Russian Kola and Novovoronezh plants and the support for licensing these activities by Gosatomnadzov (GAN). Key to most of these projects is the strengthening of the national nuclear regulatory authorities, in which NRC has had a substantial role. NRC has also provided technical assistance in other bilateral and multilateral EBRD/NSA projects.

Bilateral Cooperative and Assistance Activities

A major focus of U.S. and G-7 international nuclear policy is to enhance the safety of the nuclear programs in the countries of the FSU and CEE. The NRC safety assistance program is designed to aid the nuclear regulators in the FSU and CEE to develop regulatory techniques common in the West and to establish regulatory process independent of the user of nuclear technology. Of these countries, those with the largest nuclear programs are Russia and Ukraine. Under Presidential Decision Directive-41, the NRC supports the nuclear regulators in Ukraine, Kazakhstan, and Russia in their efforts to strengthen their national programs for nuclear materials protection, control, and accounting.

By the end of FY 1998, most of NRC's activities originally planned for these countries had been completed. Virtually all of the equipment, in the form of computers, simulators, and communications equipment, had been delivered. This more advanced infrastructure is facilitating the implementation of technology transfers and the management of growing regulatory responsibilities. Measurable accomplishments have been achieved in both countries for implementing nuclear legislation, preparing documents on which to base licensing decisions, constructing state-of-the-art training and emergency response facilities, and developing fire safety standards and learning to perform complex risk assessments. However, the program was

slowed in the latter part of the reporting period because of financial restrictions related to U.S. foreign policy concerns, NRC requirements, and fiscal limitations. In addition, serious economic influences in these countries impede the ability of the regulators to regulate—because of small budgets—and of the operators to comply—because of low revenues.

NRC actively participates in the biannual meetings of the U.S./Russian Joint Commission on Economic and Technological Cooperation, which has established a policy framework for implementing nuclear nonproliferation and safety activities. During the reporting period, NRC worked closely with its counterpart Russian regulatory authority, GAN, in such areas as development of a regulatory training center and an emergency response capability, and review of regulatory standards and criteria. Of particular nuclear safety and nonproliferation significance is the continuing bilateral effort to convert Russia's three operating plutonium production reactors to district electricity and heat uses, developing a design that would not produce weapons-grade plutonium. In support of formal U.S.-Russian Government agreements to begin implementation of this initiative, NRC and GAN announced the initialing of an implementing arrangement to enhance regulatory oversight of core conversion activities, with the intent of ensuring that safety remain at the heart of the project. NRC and GAN will focus on such areas as the verification of design and accident analysis codes, quality assurance, design requirements for criticality control systems, and probabilistic risk analysis.

In FY 1998, NRC completed its sixth year of providing bilateral assistance in nuclear safety and safeguards to Russia and Ukraine, and its third year of providing nuclear safety and safeguards assistance to Armenia and Kazakhstan. NRC has focused its assistance on helping its regulatory counterparts in such areas as developing their basic nuclear legislation, enhancing analytical analysis capabilities, enhancing emergency response and emergency preparedness capabilities, and developing inspection procedures. Further, NRC has continued to provide technical assistance on developing systems of nuclear materials protection to the regulatory bodies of countries of the former Soviet Union possessing these materials.

Supporting Commissioner Dicus's participation in the Joint Coordinating Committee for Radiation Effects Research (JCCRER), including her visit to Russia in May 1998 for a JCCRER meeting, NRC conducts joint research in health effects of radiation on the population affected by the Chernobyl disaster; health effects of exposure on workers in radiation zones; and information technologies in radiation effects.

The NRC has continued its extensive assistance program to the countries of CEE, drawing on funds provided by the Agency for International Development (AID). The NRC program is aimed at transferring to local regulators western safety principles and NRC safety review and licensing methodology. The combined efforts of western donor countries has brought about a noticeable increase in safety culture and awareness in the CEE countries, to the point that many of them are now capable of nuclear safety assistance to other CEE countries. The NRC also continued its close cooperation with the IAEA on a range of CEE activities, including participation in IAEA-initiated Technical Cooperation Program review meetings to help monitor ongoing assistance activities and to assist in defining future assistance.

The NRC has traditionally maintained strong ties with the countries of Western Europe and Canada, many with active and mature nuclear programs. Visits by the NRC Chairman, Commissioners, and the staff to Canada, France, Germany, Spain, and the United Kingdom advanced knowledge of important new technical developments, both for operating facilities and new designs, and aided in harmonization of regulatory approaches.

The Commission continues to place a high priority on safety cooperation with Pacific Rim countries. NRC conducts an active bilateral safety program with China, Japan, Taiwan, and South Korea, which was underscored by Commissioner and staff visits to Japan, South Korea, and Taiwan during the reporting period. Under the NRC-Korean Ministry of Science and Technology arrangement, one Korean technical expert completed a year-long on-the-job training assignment at NRC, and one NRC staff member (supported by one NRC contractor) participated in an advisory mission to Korea on human factors engineering.

In the fall of 1997 the Commission approved the implementation of three nuclear safety projects with the Atomic Energy Regulatory Board (AERB) of India. In support of this decision, NRC hosted a visit by AERB Chairman P. Rama Rao in March 1998, and Chairman Jackson in turn visited India in April 1998. These projects—in fire safety, emergency response and preparedness, and design modifications—were to have commenced in May 1998, but were suspended as a result of the Indian Government's nuclear detonations on May 11 and 13, 1998, and the imposition of U.S. sanctions legislation.

Although the scheduled U.S.-South Africa Binational Commission meetings were canceled, owing to U.S. military actions taken against Iraq, NRC continued to implement its nuclear safety initiatives with the South African Department of Minerals and Energy and with the Council for Nuclear Safety. Other Commissioner travel included Commissioner Diaz' visit to Mexico to address the Conference of Mexican Nuclear Society, and Chairman Jackson's visit to the Czech Republic to address a conference on Plant Life Management Extension, both of which included discussions with national nuclear authorities and site visits.

Cooperation with Multilateral Organizations

NRC works closely in the area of nuclear safety with the IAEA and the OECD/NEA. Through its participation in technical committee meetings, advisory group meetings, and the Advisory Commission on Safety Standards (ACSS), in which the NRC provides the sole U.S. representative, and its attendant Advisory Committees, NRC participates in, and provides active technical support for, a wide range of IAEA nuclear safety-related activities. NRC also attends meetings of the IAEA's policy making bodies—the Board of Governors, the Technical Assistance and Cooperation Committee (TACC), the General Conference—serving as a principal lead on matters related to nuclear safety. In this way, NRC helps to determine the direction of future technical assistance programs as well as provide input to IAEA budgetary matters. In FY 1998, NRC staff participated in nearly 50 advisory

group, technical committee, and consultants meetings in the areas of reactor safety, waste disposal, and radiation safety. NRC staff also attended several planning meetings to help plan nuclear safety-related Technical Cooperation (TC) projects for the IAEA 2000–2001 TC program. Because of its ongoing relationship with the IAEA, NRC is also able to provide urgent, near-term support for unplanned nuclear safety issues that may arise. For example, NRC also provided key support to help the IAEA address intergranular stress corrosion cracking in Soviet-designed RBMK reactors, a matter that could impact closure schedules for plants such as Chernobyl in Ukraine.

NRC also funds a nuclear safety attaché position at the U.S. Mission to International Organizations in Vienna, Austria. As the sole member of the U.S. Mission to focus on nuclear safety, the member represents U.S. policy and technical views on nuclear and radiation safety, and waste management issues to the IAEA Secretariat and programmatic and policy oversight to the U.S. Government on the IAEA's nuclear safety program.

The NRC provides support for IAEA-sponsored international safeguards activities for deterring nuclear proliferation and for strengthening and implementing IAEA safeguards. Through Cooperative Threat Reduction and Lisbon Initiative program funding, NRC assists the regulatory authorities of Russia, Ukraine, and Kazakhstan to establish national regulatory systems for materials control and accounting and physical protection. NRC staff contribute to the U.S. Program of Technical Assistance to IAEA Safeguards, which provides the largest share of voluntary technical support of any IAEA member state. In support of its review of physical protection arrangements for U.S.-controlled materials in other countries, the NRC participates jointly with other U.S. Government agencies in information exchange trips for the purpose of discussing national physical protection programs. During FY 1998, visits were made to Denmark, Austria, Germany, South Africa, and The Netherlands. The NRC also works closely with the IAEA to strengthen safeguards implementation. In support of these activities, the NRC supplies the U.S. representative to the IAEA Director General's Standing Advisory Group on Safeguards Implementation and the Chair to the international

Technical Coordinating Committee for the Program on Safeguards for the Final Disposal of Spent Fuel in Geologic Repositories. The standing advisory group reviews critical technical and policy issues of current importance and makes recommendations to the Director General and through him to the Board of Governors. NRC staff further participated in the strengthening of IAEA safeguards through participation in IAEA advisory group, consultants and experts meetings, and safeguards technical seminars.

The NRC is actively involved in the OECD/NEA budget formulation, and development of its Program of Work, and contributions to the OECD policies on sustainable development, by serving on the U.S. delegation to the Steering Committee, participation in its Standing Technical Committees and Working Groups, and the Group of Government Experts on Third-Party Liability. The NRC's research program is expanded through cooperative international research in projects such as the Halden Reactor Project, the Information System on Occupational Exposure (ISOE), the International Cooperative Program on the Decommissioning of Nuclear Facilities, and the RASPLAV Project on reactor pressure vessel accidents. Much of the NEA's technical cooperation exchange work is directly related to the NRC domestic nuclear safety priorities, particularly operational safety, radiation protection, and radioactive waste. During the reporting period Chairman Jackson was the guest speaker at the official dinner for the 40th Anniversary Celebration of the OECD/NEA. Former Commissioner Rogers completed his appointment as a member of the High Level Advisory Group on the Future Role of the OECD's Nuclear Energy Agency. The Group presented its report, "Nuclear Energy in the OECD: Towards an Integrated Approach" to the OECD Council in January 1998.

A large share of the NEA's technical work is related to NRC domestic nuclear safety priorities, particularly operational safety. Cooperative international research on high priority safety areas under the auspices of the NEA complement and expand NRC's research program in a cost effective manner. See the following list of IAEA and NEA conferences, committees, and meetings in which representatives of the NRC participated in FY 1998.

IAEA AND NEA INTERNATIONAL CONFERENCES, COMMITTEES, AND TECHNICAL MEETINGS ATTENDED IN FY98

- IAEA General Conference and Senior Regulators Meeting
- IAEA Board of Governors Meetings
- IAEA International Conferences on
 - Topical Issues in Nuclear, Radiation and Radioactive Waste Safety
 - Safety of Radiation Sources and Security of Radioactive Materials
- IAEA Advisory Commission on Safety Standards
- IAEA Advisory Committees on
 - Nuclear Safety Standards
 - Radiation Safety Standards
 - Transportation Safety Standards
- IAEA Director General's Standing Advisory Group on Safeguards Implementation
- IAEA Advisory Group Meetings on
 - Radiation Protection Against Medical Exposure
 - QA Programs for Licensing
 - Physical Protection of Nuclear Materials
 - Safeguards for Spent Fuel Disposal
- IAEA Technical Committee Meetings on
 - Transport Safety Databases
 - PSA Applications to Improve Nuclear Power Plant Safety
 - Safety Guide on Radiation Protection in Medical Exposure
- IAEA Specialists Meeting on Training Simulators in Nuclear Power Plants
- IAEA Working Group on Life Management of Nuclear Power Plants
- IAEA Consultants Meetings on
 - Requirements of Living PSA's
 - Effectiveness of Regulatory Programs on the Safety of Radiation Sources
 - Biosphere Concept for Long Term Safety Assessment
 - Scientific Program Committee for Conference on Safety of Radiation Sources
 - International Data Base on Reactor Pressure Vessel Materials
 - Investigation of Accidents with Radiation Sources
 - International Reporting System
 - Safety Guide on Decommissioning of Nuclear Fuel Cycle Facilities
 - PSA Applications
 - User Qualification/User Effect on Accident Analysis for Nuclear Power Plants
 - Peer Discussions on Regulatory Practices
 - Safety Guides on Reactor Coolant Systems and Heat Sink/Transport Systems
 - Integrity and Brittle Fracture Safety Assurance for Mohovce NPP
 - Safety of Radiation Sources and Security of Nuclear Materials

- NEA Steering Committee on Nuclear Energy
- NEA Standing Technical Committees on
 - Nuclear Regulatory Activities (CNRA)
 - Radiation Protection and Public Health (CRPPH)
 - Safety of Nuclear Installations (CSNI)
 - Radioactive Waste Management (RWMC)
- NEA Group of Governmental Experts on Third Party Liability
- NEA/CNRA Meetings on
 - Ageing Reactors
 - Inspection Practices
- NEA/CSNI Principal Working Groups on
 - Operational Experience and Human Factors
 - Task Group on Human Factors
 - Coolant System Behavior and Accident Prevention
 - Task Group on Degraded Core Cooling
 - Task Group on Thermal Hydraulic Applications
 - Task Group on Fuel Safety Criteria
 - Integrity of Components and Structures
 - Subgroup on Seismic Behavior of Structures
 - Containment Management and Severe Accident Management
 - Risk Assessment
- NEA/CSNI Senior Experts on Safety Research
 - Joint Research Project Meetings (Halden, Rasplav, Sandia Lower Head)
- NEA/CSNI Nuclear Fuel Cycle Safety Group
- NEA/RWMC Workshop on Performance Assessment Scenario Development

Development of International Legal Instruments

In FY 1998, NRC continued to support U.S. Government efforts to develop an international legal basis for a global nuclear safety culture, as represented in the Convention on Nuclear Safety (CNS); the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention); and the Convention on Supplementary Compensation for Nuclear Damage. NRC worked closely with DOS and DOE to seek Senate ratification of the CNS, and to complete the interagency review of both the Joint Convention and the Supplementary Compensation Convention so they can be sent to the President to be forwarded to the Senate for its advice and consent to ratification. When the United States becomes a CNS Contracting Party, NRC will be the lead Federal agency in implementation activities related to U.S. obligations under the Convention, including the development of the U.S. National Report. When the U.S. becomes a Contracting Party to the Joint Convention, NRC will provide technical advice to the DOE, which will be the lead Federal agency in the Joint Convention's implementation activities. When the supplemental funding convention and the associated protocol to amend the Vienna Convention on Liability are ratified, the U.S. will be able to participate in an international liability regime in the event of a nuclear accident.

International Nuclear Regulators Association

In FY 1998, Chairman Jackson and the heads of the national regulatory bodies of Canada, France, Germany, Japan, Spain, Sweden, and the United Kingdom met in January and July 1998 to exchange views on a broad range of regulatory policy issues. The Association continued their discussions of salient differences and common features in national regulatory approaches and identified a set of fundamental elements in

nuclear safety regulation. These key elements were communicated to INRA member national governments for reference in nuclear safety assistance and cooperation efforts. Further, a paper on "Ensuring Nuclear Safety in an Increasingly Competitive Electricity Sector," along with the key elements list, were transmitted to the March 1998 Energy Ministerial in Moscow, and to the May 1998 Birmingham G-7 Summit. During this reporting period, INRA also exchanged letters with the IAEA to provide for enhanced communication and possible future cooperation.

Year 2000 Activities

NRC has developed a Year 2000 (Y2K) contingency plan in coordination with the U.S. nuclear power industry; other Federal agencies, such as the Federal Emergency Management Agency; State governments, and international nuclear regulatory organizations. The draft plan includes provisions to collect and disseminate information on Y2K-related events that occur in countries in time zones ahead of the United States and to conduct an international Y2K contingency plan exercise in October 1999, which will be closely coordinated with Canada and Mexico.

NRC is also actively promoting international awareness of the possible impact of Y2K computer problems on the safety of nuclear installations. During the 42nd General Conference, IAEA Member States adopted an NRC-drafted resolution on Y2K as it applies to the safety of nuclear power plants, fuel cycle facilities, and other enterprises using radioactive materials. The resolution urged Member States to submit information to the IAEA on activities underway to inventory and remediate Y2K problems at the nuclear facilities and designated the IAEA as the coordinator for disseminating information about Member State Y2K activities. In addition, NRC identified a U.S. Cost-Free Expert to help the IAEA implement a Y2K program related to the safety of nuclear power plants.

Communicating With NRC Stakeholders

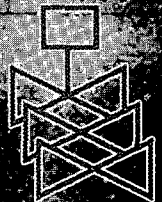
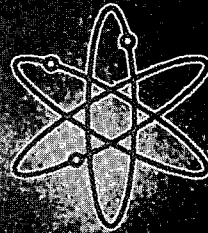
Chapter 5

Building and maintaining public trust is critical to carrying out the U.S. Nuclear Regulatory Commission's (NRC's) mission. To be an effective steward for nuclear safety, the public, those we regulate, and other stakeholders in the national and international community must have respect for and confidence in NRC's regulatory actions. NRC assigns a high priority to earning public trust and confidence through early identification of public concerns and through facilitating interaction with the public and participation by the public in regulatory decisions of substantial interest to NRC stakeholders. The "Citizen's Guide to U.S. Nuclear Regulatory Commission Information" (NUREG/BR-0010, Rev. 3), published in December 1998, describes various types of NRC information and how to obtain it. This information may be of interest to all stakeholders.

PUBLIC INFORMATION

The NRC continued its mission to protect public health and safety while providing full and fair access to our decisionmaking process to all who are interested. To foster greater understanding of and confidence in the agency's regulatory oversight of the nuclear power industry and the licensed users of radioactive material, the NRC is committed to providing complete, clear, and accurate information about our programs, policy decisions, and activities. This goal is accomplished primarily through news releases, pamphlets, fact sheets, and other published materials. Much of this information is available electronically on the NRC World Wide Web (WWW) site <<http://www.nrc.gov>>. Additionally, NRC closely follows news coverage of the agency and responds to press and public inquiries in a timely, courteous, and professional manner. The agency also administers a cooperative program with schools to educate students and teachers about the agency's responsibilities.

In the spring of 1998, the staff presented the Commission with an extensive report containing more than 40 recommendations aimed at improving the quality, clarity, and credibility of the agency's communications with all those interested in the safety oversight of nuclear power, and particularly with members of the general public. The Commission approved most of the recommendations, and the staff is currently implementing them. These initiatives include the—



- development of an audio/visual library for photographs to be used in briefings and publications;
- review of training programs to incorporate communications techniques;
- updating of the glossary on NRC's WWW page; and
- development of a public involvement handbook as a staff reference and training tool.

The communications plan will assist the agency by identifying public concerns earlier, providing clearer oral and written communications, allowing earlier public involvement in NRC activities, responding more effectively to public concerns, and improving public access to information.

In July 1998, the Commission met with several invited stakeholders to discuss concerns about the NRC's regulatory program and to invite their comments on nuclear reactor and spent fuel programs, specifically concerning inspection and enforcement, use of performance indicators and performance assessment, risk-informed regulations, regulatory policies, and the timeliness of NRC processes. The stakeholder meeting was positively received and the Commission will periodically continue these types of dialogues.

The Office of Public Affairs established a special Internet Web page entitled "NRC's Changing Regulatory Environment" to keep stakeholders and the general public informed of steps being taken to improve the NRC's regulatory performance. The Internet address for this page is <<http://www.nrc.gov/OPA/changes.htm>>. This page includes the text of Chairman Jackson's August 7, 1998, tasking memorandum to the staff calling for priority action in a number of areas to address concerns raised during a Senate Oversight Committee hearing on July 30, 1998. The memorandum is at <<http://www.nrc.gov/NRC/TASKING/19980807memo.html>>. Staff responses to the tasks in the memorandum are being posted as updates are issued. This Web page also includes subsequent staff requirements memoranda, meeting transcripts, prepared testimony, and responses to congressional questions and speeches related to the changing regulatory environment.

Media Workshop

In April 1998, the NRC held a two-day workshop for reporters that covered current issues facing nuclear utilities across the Nation. At the workshop, senior managers and staff specialists spoke to more than a dozen reporters from all over the country about allegations pertaining to safety concerns, reactor and materials decommissioning, regulation of medical facilities, the integrated nuclear power plant assessment program, spent fuel storage, nuclear plant license renewal, and other current issues reporters may write about. Reporters took the opportunity to interview the NRC staff on particular issues of interest and toured the NRC Operations Center. The reporters expressed enthusiasm about the workshop and said it should help them better understand and report on events at nuclear facilities in their communities.

Published Information

During FY 1998, NRC published a fact sheet on the accident at Three Mile Island and updated and published reports and brochures targeted at specific technical issues. These reports and brochures included the "User's Guide to Physical Protection Documents Published by the NRC" (NUREG/BR-0250) in addition to the following, which were published for comment:

- Staff Responses to Frequently Asked Questions Concerning Decommissioning of Nuclear Power Reactors (NUREG-1628)
- Proposed Standard Technical Specifications for Permanently Defueled Westinghouse Plants (NUREG-1625)
- Draft Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the *Uranium Mill Tailings Radiation Control Act* (NUREG-1620)

The NRC also continued to expand its information on the WWW site by providing plant status and event reports that NRC licensees submit. This collection of reports is updated daily. A new section called "NRC's Changing Regulatory Environment" contains information on major

external and internal events that have been shaping the agency in recent times. The NRC also continues to offer current information on our regulatory program, including press releases and speeches, reports of high public interest on regulatory oversight of specific licensees, and updates on current information affecting the nuclear industry. The agency continues to provide press releases and speeches of senior officials electronically to about 1,000 subscribers worldwide free of charge.

News Conferences

Chairman Jackson held a number of news conferences both at headquarters and at nuclear plant sites around the country after visits to those facilities. She held a press conference and public meeting to discuss Millstone (Connecticut) in February 1998 and held a press briefing at Three Mile Island (Pennsylvania) in August 1998. She held press conferences after her trips to Yucca Mountain (Nevada) and Lawrence Livermore National Laboratory (California) in January 1998. She also held press conferences at St. Lucie (Florida) during her review of a major steam generator outage (Figure 5.1). Press conferences were held to discuss the pilot program for simulating NRC oversight of Department of Energy (DOE) activities at Oak Ridge (Tennessee) in March 1998 (Figure 5.2), and at Savannah River (South Carolina) in June 1998.

Senator Lieberman and the EDO toured the Millstone plant in February 1998 (Figure 5.3), and Chairman Jackson and the Special Projects Office Director visited the Millstone control room (Figure 5.4).

Commissioner Diaz briefed the press at Catawba (South Carolina) in February 1998 and at Millstone in April 1998. Figure 5.5 shows him in the Millstone control room.

Each of the NRC's four Regional Administrators conducted periodic news briefings during the year. Sessions were held at the Salem plant in New Jersey, the D.C. Cook plant in Michigan, and the

Quad Cities plant in Illinois. Other sessions were held in Stuart and Miami, Florida; Atlanta, Georgia; and Erwin, Tennessee. In March 1998, a press conference to discuss NRC assistance with DOE overflights searching for missing cesium-137 applicators was held in Greensboro, North Carolina (Figure 5.6), and Region II gave information on the aerial surveys (Figure 5.7). Press conferences were held at Lynchburg, Virginia, in August 1998, following a special inspection of a new food and materials irradiator complex, and following presentations of Systematic Assessments of Licensee Performance (SALPs) at Oconee and Summer (South Carolina), Watts Bar and Sequoyah (Tennessee), Browns Ferry (Georgia), Farley (Alabama), and Turkey Point (Florida). See also "Revisions to the Assessment and Oversight Process" in Chapter 1.

Decommissioning meetings were held regarding the Big Rock Point and Fermi plants (Michigan), LaCrosse (Wisconsin), and the Zion and Dresden plants (Illinois). A public meeting was held in Cleveland, Ohio, to discuss inspection findings related to concerns about radioactive contamination at Advanced Medical Systems, Inc.

School Volunteer Program

NRC employees continued their commitment to their communities by volunteering in area schools through the School Volunteer Program. This year, approximately 100 employees visited area schools near headquarters and the regional offices to judge science fairs, tutor students, and participate in career days.

NRC provided judges for the Montgomery Area Science Fair in Gaithersburg, Maryland, and invited special award winners to explain their winning projects before the Commission and other employees at headquarters.

NRC also hosted Montgomery County teachers for a 1-day workshop at headquarters, focusing on agency employees' careers and skills, fundamentals of radioactivity, and basic reactor operations.

COMMUNICATION WITH THE CONGRESS

The Office of Congressional Affairs is responsible for developing, managing, and coordinating relations with the Congress, and this staff is the principal point of contact between the agency and Congress. The office coordinates the appearances and testimony of all NRC officials at hearings, monitors and tracks bills relevant to the NRC, coordinates briefings for Members of Congress

and their staffs, keeps the Congress informed of current agency activities, and keeps the NRC apprised of congressional concerns and interests.

During Fiscal Year (FY) 1998, NRC witnesses testified or submitted testimony at eight hearings before congressional committees and subcommittees, as shown in Table 5.1. The Congressional Affairs staff attended and prepared summaries and reports for over 50 hearings and legislative markups (i.e., legislation marked for revision) during the fiscal year.

Table 5.1 Congressional Hearings at Which NRC Witnesses Testified or Submitted Testimony During FY 98

Date	Committee	Subject
03/20/98	Committee on Appropriations Subcommittee on Energy & Water Development (House) Testimony Supplied for the Record	FY 99 NRC Appropriations
03/25/98	Committee on Commerce Subcommittee on Energy & Power (House)	FY 99 NRC Authorization
05/14/98	Committee on Science Subcommittee on Technology (House)	Millennium Short Circuit: The Y2K Effect on Energy Utilities
05/20/98	Committee on Commerce Subcommittee on Energy & Power (House)	External Regulation of DOE Facilities
05/21/98	Committee on Science Subcommittee on Energy & Environment and Subcommittee on Basic Research (House)	External Regulation of DOE Facilities
06/12/98	Special Committee on the Year 2000 Technology Problem (Senate)	Y2K and the Power Grid
07/30/98	Committee on Environment and Public Works Subcommittee on Clean Air, Wetlands, Private Property, and Nuclear Safety (Senate)	NRC Oversight Hearing
09/03/98	Committee on Armed Services Subcommittee on Strategic Forces (Senate)	DOE's Low-Level Waste Disposal Practices



Figure 5.1 Region II Administrator Luis Reyes Briefs NRC Chairman Shirley Ann Jackson During a November 1997 Visit to St. Lucie Nuclear Power Plant Near Ft. Pierce, Florida. Florida Power and Light Company Was Changing Steam Generators in Its Unit 1 Containment Building.



Figure 5.2 NRC Official John Austin (left) and a DOE Facilitator Respond to Questions From the Audience During a Public Meeting at Oak Ridge (Tennessee) Associated Universities To Discuss a Pilot NRC Plan To Simulate Regulation of DOE Activities at a DOE Radiochemistry Laboratory at Oak Ridge.



Figure 5.3 Senator Joseph Lieberman (Democrat from Connecticut) Tours the Millstone Plant With NRC Executive Director for Operations Joseph Callan in February 1998.



Figure 5.4 Special Projects Office Director William Travers, a Unit 3 Operator, and Chairman Shirley Ann Jackson in the Control Room at Millstone Nuclear Power Plant in February 1998.

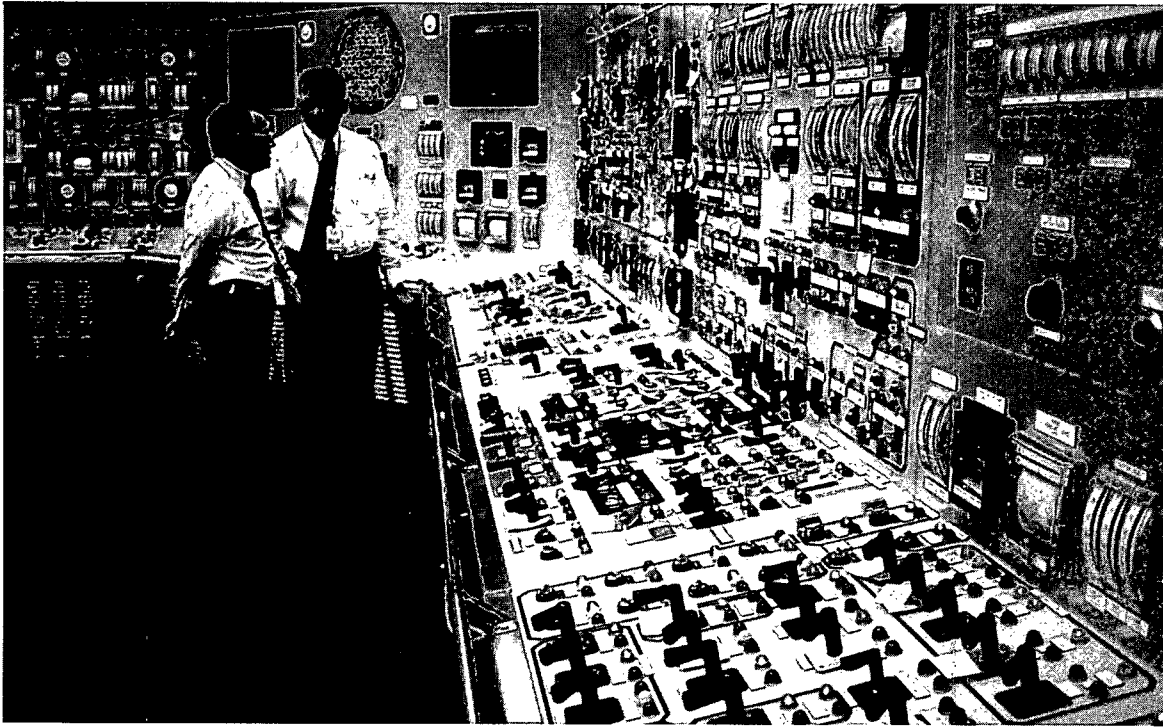


Figure 5.5 Commissioner Nils Diaz in the Control Room at Millstone Nuclear Power Plant in April 1998.



Figure 5.6 The NRC's Public Affairs Office Arranged for News Reporters To Interview the Helicopter Pilot and Crew Who Would Perform Aerial Surveys Over Greensboro, North Carolina, in March 1998 To Search for Missing Cesium-137 Sources That Disappeared From Greensboro's Moses Cone Hospital.



Figure 5.7 Region II Official Charles Hosey Points to Map Locations During the Aerial Surveys Over Greensboro, North Carolina.

STATE AND LOCAL GOVERNMENTS AND AMERICAN INDIAN TRIBES

One of NRC's priorities is to maintain open lines of communication and close liaison with State and local government officials and their organizational representatives, as well as with Native Americans and organizations representing American Indian Tribes. These relationships are developed in an effort to foster public confidence by fully addressing concerns and to promote increased understanding of issues related to NRC regulation, inspection, and oversight activities to protect public health and safety.

The NRC continued to pursue cooperative activities with the States and their national organizations in 1998. In addition to routine interaction with State and local government and Indian Tribe officials, NRC representatives participated in a number of State-related events, including the activities of the National Association

of Regulatory Utility Commissioners (NARUC), as they relate to nuclear issues and spent fuel disposal and storage. Commissioner Dicus represented the Commission as a member of the NARUC Subcommittee on Nuclear Waste Issues. The NRC staff met with State and local officials throughout the year to discuss the results of the SALPs of nuclear power plants and outreach activities related to emergency response planning. The NRC also maintained cognizance of the activities of other State-related organizations, such as the National Governors' Association, the Western Governors' Association, and the National Conference of State Legislatures.

The NRC also implements a policy allowing State officials to observe or participate in NRC inspections at reactors, in accordance with the policy statement on "Cooperation With States at Nuclear Power Plants and Other Nuclear Production or Utilization Facilities" (57 FR 6462). In some cases, States may observe special inspections as well. The NRC policy statement on Cooperation With States identifies the governor-appointed State Liaison Officer (SLO) as the primary State contact for all requests

involving observation of NRC inspections of plants or facilities. The SLOs also serve as the NRC's primary points of contact with the States about all relevant NRC decisions and actions. The NRC hosts a national SLO meeting every 3 years and regional SLO meetings are held on an as-needed basis in the off-years.

The NRC maintains communications with those American Indian Tribes and their national organizations potentially affected by or otherwise interested in NRC regulatory activities. Tribal interest in nuclear-related activities, including that of the Navajo Nation in New Mexico, the Prairie Island Dakota Indian Community in Minnesota, the Skull Valley Band of Goshute Indians and the Confederated Tribes of the Goshute Reservation in Utah, and the Cherokee Nation in Oklahoma, has provided for a number of government-to-government exchanges of information related to NRC's regulatory authority in the areas of high- and low-level radioactive waste storage, disposal, emergency response, transportation, and reclamation.

COMMISSION MEETINGS AND RELATED ACTIVITIES

The NRC Commissioners meet to discuss agency business in the Conference Room of the NRC Headquarters building located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland. Members of the public are welcome to attend and observe most Commission meetings. However, a Commission meeting may be closed to members of the public if it is convened to deal with one or more of certain subjects specified in the *Government in the Sunshine Act*. Specifically, the *Sunshine Act* allows the closing of meetings involving classified documents, information deemed confidential by statute, trade secrets, investigations, adjudicatory matters, internal personnel matters, matters involving personal privacy, or similar information. Members of the public attend open Commission sessions as observers, but they may not actively participate unless specifically requested to do so by the

Commission. During FY 1998, the Commission held 72 meetings that were open to public observance. Of particular note, the Commission held an open public meeting on July 17, 1998, to meet with a selected group of stakeholders representing the nuclear industry, public interest groups, and informed individuals, as well as the NRC staff, to conduct a dialogue on the NRC's nuclear reactor and spent fuel regulatory programs. The Commission discussed stakeholder concerns about the NRC and its regulatory programs and potential short- and long-term actions to address those concerns. A copy of the transcript of this meeting may be found in the public document room (PDR) or on the NRC WWW site <<http://www.nrc.gov/NRC/COMMISSION/TRANSCRIPTS/index.html>>.

Copies of viewgraphs and the principal staff papers to be considered at open meetings are normally made available at the entrance to the Conference Room before the meeting begins. At the conclusion of each open meeting, a transcript of the meeting is placed in the PDR for inspection and copying, along with any papers made available to the public at the meeting. A copy of the transcript is also made available in electronic form on the WWW site. In addition, the Commission makes available videotapes of open Commission meetings for reviewing and copying in the PDR.

In all cases, the Commission attempts to provide advance notice of each meeting at least 1 week before it is held. To provide its stakeholders with additional advance information about its meeting dates and topics, the Commission publishes a weekly schedule in the *Federal Register* and posts the schedule to the NRC Web site <<http://www.nrc.gov/SECY/smj/schedule.htm>>. The schedule for Commission meetings and voting sessions are regularly announced on a recorded telephone message (301-415-1292). Copies of advance schedules are posted in the PDR and also distributed via e-mail over the Internet system. The schedule includes the time, place, and subject matter of the meeting; states whether it is an open or closed meeting; and gives the name and telephone number of an official designated to respond to requests for information about the meeting.

Commission Decisionmaking Documents

The primary decisionmaking tool of the collegial Commission is the written issue paper submitted by the staff, commonly called a "SECY paper." Policy, rulemaking, and adjudicatory matters, as well as general information, are provided to the Commission for consideration in SECY papers. As a general policy, all SECY papers will be released to the public unless they contain specific, limited types of information (adjudicatory, enforcement or investigatory, lawyer-client or legal work product, classified or proprietary, or personal privacy) that the Commission has specifically agreed should be withheld. Along with the SECY paper, the Commission also releases the "staff requirements memorandum" (SRM) and the "Commission voting record" (CVR) associated with the paper. The SRM includes a concise statement of the Commission's decision on the recommendation of the SECY paper and a clear statement of any additional requirements or tasks to be performed by the staff. The CVR contains a clear indication of the individual votes of the Commissioners, a copy of each Commissioner's vote sheet, and a comment resolution section indicating the extent to which differing views, if any, were expressed, and how they were accommodated, resolved, and reflected in the final decision. SECY papers, SRMs, and CVRs are available through the NRC's PDR or may be downloaded from the NRC WWW site <<http://www.nrc.gov/NRC/COMMISSION/SECYS/index.html>>. During FY 1998, the Commission released 254 papers to the public.

Commission History Program

Through the Commission History Program, the origins and evolution of NRC regulatory policies are explored and set forth in their historical context. Research on the evolution of these policies is drawn from—

- the archives of a number of Government agencies;
- personal interviews; and

- the personal papers of former Government officials and others involved in regulatory issues.

The History Office is currently conducting research for the third volume of a detailed, scholarly history of nuclear regulation. The agency historian, J. Samuel Walker, recently published an essay on the NRC in *A Historical Guide to the U.S. Government*, ed. George T. Kurian (New York: Oxford University Press, 1998). "A Short History of Nuclear Regulation, 1946–1990" (NUREG/BR–0175), is available by contacting the Government Printing Office (GPO), or by sending an e-mail request to <jsw@nrc.gov> or by looking on NRC's WWW site <<http://www.nrc.gov/SECY/smj/shorthis.htm>>.

Proceedings and Litigation

The Secretary of the Commission manages the official NRC adjudicatory dockets for the Commission. The adjudicatory dockets contain the filings of all parties to the Commission's licensing and enforcement proceedings that are initiated by a party's request for a hearing or petition to intervene. The hearing docket also contains transcripts of the hearings held in each case, the exhibits, and all orders and decisions issued in such proceedings by the Commission or its Atomic Safety and Licensing Boards (ASLBs). The Secretary also serves orders of the Commission and the ASLBs on the parties to proceedings and certifies docket indexes to the United States Courts in agency litigation. See "Adjudicatory Proceedings" in Chapter 1.

Currently, filings in Commission adjudications are available to the public by ordering them on-line or by telephone or by visiting the Commission's PDR. Case documents are also available in local public document rooms usually established in community or university libraries in the areas in which licensees' plants or facilities are located. The Commission also publishes Commission and ASLB orders in the "Nuclear Regulatory Commission Issuances" (NUREG–0750), a case law publication available to the public through Federal and State and local law libraries and some general public libraries. Certain decisions of the Commission are posted on the NRC WWW site. During FY 1998, parties to adjudicatory

proceedings were allowed by the Commission to utilize e-mail as a method of filing pleadings and other documents with the Commission. The Office of the Secretary established an e-mail address for this purpose: <hearingdocket@nrc.gov>.

However, when required by rule or order, signed paper copies must also be sent to the Secretary. In the future, all case file documents will be available to the public through the Commission's document management system or by posting on NRC's WWW site. See "Agencywide Documents Access and Management System" in Chapter 6 of this report.

ADVISORY COMMITTEES

The NRC engages the expertise and experience of a wide segment of the public through the service of certain members of the public on the Commission's standing advisory committees and on its *ad hoc* committees. Members of NRC committees are drawn from a broad cross-section of the scientific and technical communities, as well as from State and local governmental organizations, the National Congress of American Indians, and private citizens. The committees provide advice and recommendations to NRC on a large range of issues affecting NRC policies and programs.

During FY 1998, the NRC had four Chartered Advisory Committees: the Advisory Committee on Reactor Safeguards (ACRS), the Advisory Committee on Nuclear Waste (ACNW), the Advisory Committee on the Medical Uses of Isotopes, and the Licensing Support System Advisory Review

Panel. In FY 1998, the committees held a total of 68 meetings and issued 48 reports to the Commission on a variety of subjects. The reports proved to be very helpful to the Commission in formulating its decisions on issues involving reactor safety and regulatory processes, nuclear isotope usage, nuclear waste disposal, and revision of the Commission's regulations for the conduct of future hearings on a high-level radioactive waste facility. A complete summary of the activities of the NRC's Committees for 1998 can be found in the NRC's Annual Report on Advisory Committees filed with the General Services Administration (GSA) at <<http://policyworks.gov/org/main/mc/index-r.htm>>. Detailed meeting schedules, transcripts, and copies of reports for the ACRS and the ACNW (the two committees that meet on a regularly scheduled basis) can be found on the NRC's WWW site <<http://www.nrc.gov/ACRSACNW/>>.

In accordance with the requirements of the *Federal Advisory Committee Act*, NRC advisory committees meet in public sessions at headquarters locations and in venues throughout the United States. Notices of advisory committee meetings are published in the *Federal Register* and in NRC press announcements. Notices of meeting dates and topics are also posted on NRC's WWW site <<http://www.nrc.gov/NRC/PUBLIC/meet.html>> and at the PDR. Transcripts or minutes of meetings are also available for inspection and copying at the PDR. Persons interested in committee meetings or the activities of a particular committee may write to the NRC Advisory Committee Management Officer, Office of the Secretary, Washington, D.C. 20555-0001, call 301-415-1968, or send an e-mail to <alb@nrc.gov>.

Several U.S. Nuclear Regulatory Commission (NRC) organizations provide support services to the program area staffs who are executing their regulatory mission activities. The senior manager for two of these offices serves on NRC's Executive Council with the Executive Director for Operations: the Chief Financial Officer (CFO) and the Chief Information Officer (CIO). This chapter describes major support activities achieved in Fiscal Year (FY) 1998 in the areas of personnel and training, security and facilities, and in the management and dissemination of information.

OFFICE OF THE CHIEF FINANCIAL OFFICER

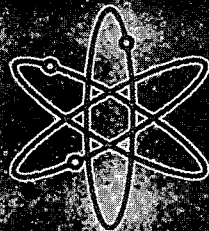
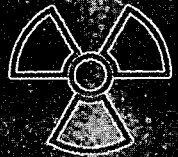
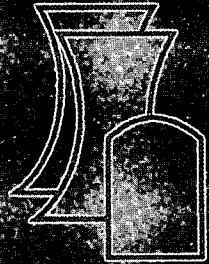
The Office of the Chief Financial Officer (OCFO) is responsible for the NRC's overall planning and financial management.

The Chief Financial Officers Act

The *Chief Financial Officers Act* requires that an agency CFO oversee all financial management activities relating to the programs and operations of the agency, which includes establishing financial management policies and requirements; monitoring operation of agency financial management systems; monitoring financial execution of the agency's budget; and developing an annual financial statement that is auditable.

The NRC has produced an annual financial statement each year since FY 1992 and has received an *unqualified* audit opinion on every statement beginning with FY 1994. FY 1998 was the fifth year that the NRC achieved an unqualified opinion. Of the 24 agencies that have CFOs, the NRC was one of ten agencies to achieve an *unqualified* opinion on its FY 1998 Financial Statements.

The NRC's goals and strategies for improving financial management are consistent with the goals and strategies for implementing Government-wide financial management and the priority initiatives discussed in the 1998 Federal Financial Management Status Report issued jointly by the United States CFOs Council and the Office of Management and Budget (OMB). To ensure the integrity of the financial information reported to NRC stakeholders, the NRC has adopted the accounting standards recommended by the Federal Accounting Standards Advisory Board and approved by OMB.



Government Performance and Results Act

The *Government Performance and Results Act* requires Federal agencies to develop and submit strategic and performance plans that focus agency planning and activities around the achievement of goals and desired outcomes. Agency performance is measured toward the achievement of these goals in terms of performance outcomes. This act requires each Federal agency to develop a triennial strategic plan, an annual performance plan, and an annual accountability report.

The NRC's first strategic plan, which covered FY 1997 through FY 2000 was submitted to Congress in September 1997. NRC's first performance plan was for FY 1999; it was submitted to Congress in February 1998. The Performance Plan sets annual goals with measurable performance indicators that are linked to the Agency's Strategic Plan. The performance indicators are used to measure or assess the relevant output, service levels, and outcomes related to the agency's performance goals. Of the 24 agencies that have CFOs, the congressional staff ranked NRC sixth in the quality and completeness of its "Strategic Plan" and ranked its "Performance Plan" fourth. The NRC is working to improve its next strategic plan. The OCFO incorporated the NRC's second annual Performance Plan with its FY 2000 Budget that was recently submitted to the Congress. Currently, the NRC is in the process of updating the Strategic Plan to reflect fully the regulatory reform efforts underway.

For the past 4 years, the NRC has participated in a pilot project, along with other Federal agencies, to streamline financial management reporting by consolidating performance-based reporting into a single accountability report. The NRC's FY 1998 Accountability Report contains the agency's audited financial statement, program performance results, and the Chairman's statement on management controls, agency financial management systems, and final actions on Office of the Inspector General audit recommendations.

Improving Financial Management

The OCFO has continued a process of iterative improvements to financial management, including financial systems, processes, reporting, and training.

Financial Systems. The OCFO, in collaboration with the OCIO, is implementing an agencywide integrated resource management system (STARFIRE), which provides for the automation and integration of systems critical to the support of financial management, which in turn supports the programs of the agency. The overarching goal is to eliminate multiple, ancillary financial tracking systems within the agency by establishing a single source of financial management data that are commonly available to all managers. The benefits inherent in the implementation of STARFIRE are more than financial. The system will provide NRC with the tools required to meet growing demands for faster and inexpensive management information.

STARFIRE will comprise the following financial systems: general ledger, budget formulation, funds control, travel, cost accounting, and fee billing. The core financial system will include accounts payable and accounts receivable/collection applications. Mixed systems will include procurement, payroll/personnel, labor cost distribution, performance measurement, and property reporting.

Managing Receivables. The Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508), as amended, requires that in FY 1998, the NRC collect fees (under 10 CFR Part 170) and annual fees (under 10 CFR Part 171) that approximate 100 percent of the agency's budget authority, less the amount appropriated to the NRC from the Nuclear Waste Fund. Public Law 101-508 appropriated \$472.8 million to the NRC for FY 1998. Of the funds appropriated to the NRC, \$15 million was derived from the Nuclear Waste Fund and \$3 million was appropriated for regulatory reviews and other assistance provided to the Department of Energy and other Federal agencies, both of which are excluded from licensee fee revenues. In FY 1998, the total amount collected through fees and other charges was \$458.9 million. Of this total, \$454.8 million offsets

the appropriation, bringing the net appropriation for FY 1998 to \$18 million. The remaining \$4.1 million will be used to reduce the total fees assessed in FY 1999.

Delinquent Debt. The OCFO has steadily improved the collection of receivables and reduced the amount of delinquent debt owed to NRC. As of September 30, 1994, the delinquent debt owed to NRC was \$16.5 million. As of September 30, 1998, the delinquent debt owed to NRC had been reduced approximately 90 percent to \$2.1 million.

Prompt Payment. On-time payments subject to the *Prompt Payment Act* have increased steadily from 82 percent in FY 1994 to 96 percent in FY 1998. Indicative of this performance, the amount of interest penalties incurred have decreased from \$15,000 in FY 1994 to \$6,100 in FY 1998.

Electronic Payments. The percentage of employees paid via electronic funds transfer (EFT) has increased from 96 percent in FY 1994 to 99 percent in FY 1998. The percentage of vendor payments made via EFT has increased from approximately 32 percent in FY 1994 to 85 percent in FY 1998. More emphasis will continue on electronic payments to vendors with the passage of the *Debt Collection Improvement Act*, and the President's Electronic Commerce initiative.

Financial Performance Reporting. Financial performance reporting is accomplished via the monthly "Budget Execution Report," which will continue to be issued to the agency's Executive Council and agency financial managers. The report, designed to allow agency financial managers to routinely consider financial implications in agency discussions and decisions, measures the agency and program office financial performance against established goals and targets.

Financial Training. The OCFO, in conjunction with the Office of Human Resources, developed a four-part seminar on financial management and administrative control of funds for all NRC managers and supervisors, allowance financial managers, and funds certifying officials. Approximately 250 staff received this training in 1998.

Management Control Program. A management control program is organized within the context of the National Performance Review and the most recent revision to OMB Circular No. A-123, "Management Accountability and Control." Each year, an annual statement to the President and Congress is prepared that reports the agency's evaluation of its management control and financial management systems. For FY 1998, the agency's assessment disclosed no material weaknesses in the NRC's programs or administrative activities. Management did identify managerial cost accounting as a significant weakness pursuant to the *Federal Manager's Financial Integrity Act* and as a substantial noncompliance with the *Federal Financial Management Improvement Act*. A corrective action plan is being developed to resolve this deficiency.

OFFICE OF THE CHIEF INFORMATION OFFICER

The Chief Information Officer manages, in accordance with Federal laws and regulations, the technology to create information and to disseminate NRC's information to appropriate audiences.

Year 2000 at the NRC

The NRC has an active Year 2000 (Y2K) program to address software, hardware, embedded chip, and regulatory issues associated with the Y2K computer problem. The OMB developed a strategy and established guidelines and milestones to be followed by all Federal agencies. The major milestones comprise five distinct program phases:

1. Awareness;
2. Assessment;
3. Renovation;
4. Validation; and
5. Implementation.

Internal Program. During FY 1998, NRC was deeply involved in remediating its computer

systems and embedded-chip systems that have Y2K problems, accomplishing tasks associated with the previously mentioned phases. As of the end of FY 1998, NRC has renovated, validated, and implemented 50 percent of its mission-critical systems, 75 percent of its business-essential systems, and 39 percent of its non-critical systems. As of February 5, 1999, remediation and implementation of all NRC computer information systems needing repair because of the Year 2000 problem were completed.

Additionally, the staff has assessed all areas of the agency that have the potential to exchange data with other Federal, State, and local governments, and with the international and commercial entities. Three systems were identified that exchange data with NRC. Two of these systems exchange data with one source; one system exchanges data with six sources.

Discussions with NRC data exchange partners reveal that two exchanges are already Y2K-compliant and that five exchanges do not require NRC to make any changes. The final data exchange is contained in one of NRC's mission-critical systems. This system is on schedule for implementation in March 1998.

We have analyzed and identified where embedded chip systems exist at the NRC. Forward date testing of some embedded chip systems is problematic since access is limited to embedded chip system control programs. As a result, both industry and NRC rely on manufacturers' certification to establish compliance and, where possible and appropriate, in-house testing to confirm compliance.

In the area of microcomputers and laser printers, we have successfully tested our hardware with available testing software to determine compliance. NRC has a program underway to replace all microcomputers that have non-compliant chips by December 1998.

In the area of local- and wide-area network computer components, one of our mission-critical systems being replaced covers all of the infrastructure for these components. This mission-critical system is now 76 percent complete.

All agency building systems were assessed. We determined that there are four building system categories that could have Y2K issues: environmental, fire protection, security access control and alarms, and elevator. Building system vendors for these systems were contacted, and we received written responses from them. We have determined that continued safe operation of systems in these four categories will not be affected by the Y2K date rollover.

NRC sent letters to its various telecommunications equipment vendors nationwide in order to determine their progress in addressing the Y2K problem as it relates to their products. All of the vendors have responded, been contacted by telephone, or had their Internet site accessed to determine status. Responses and research indicate that 94 percent of our telecommunications inventory is Y2K-compliant or is not affected by Y2K issues. A small number of these vendors (6%) have been identified as non-compliant and will be retired or replaced. We have also contacted our telecommunications service providers to determine their plans to achieve Y2K compliance. All of our service providers have responded that they are compliant or will be compliant by mid-1999.

Finally, in the area of business continuity and contingency planning, NRC has an established program that develops, maintains, and updates the agency's business continuity plans, in accordance with Federal guidance, including OMB Circular A-130, Appendix III, "Security of Federal Automated Information Resources." The objective of this program is to ensure that appropriate business continuity plans are put in place for all Federal general purpose systems and major applications, which include the mission-critical applications identified under the Y2K program. The process of developing the plans has several steps:

- Conduct Business Impact Analysis and Risk Assessment
- Develop Security Plan
- Test Security Plan
- Certify and Accredite the System
- Develop Disaster/Business Continuity Plan

- Train personnel and test the Disaster/Business Continuity Plan.

OCIO uses contractor resources, obtained through General Services Administration's (GSA's) multiple award contract for Computer Security Services, to assist with our work in this area, including the conduct of facilitated risk assessments and development of plans.

NRC's business continuity plans cover a wide range of possible events from routine software and hardware problems to major natural disasters. One such event would be a software failure stemming from an undetected Y2K problem. NRC has tried to ensure that contingency plans for its mission-critical systems contain elements that specifically address failures arising from the Y2K problem.

Compared to large, complex applications dealing with millions of records and complex real-time processes, NRC mission-critical systems are relatively simple and deal with a volume of information that is small enough to manage by manual means, if necessary, should automation be temporarily unavailable. Our contingency plans are commensurate with the nature of our mission-critical systems. We are confident that NRC's plans are sufficient to address Y2K issues.

NRC's seven mission-critical systems support three core functions. One system supports the interchange of information agencywide and is integral to all agency operations. Three interrelated systems support our response capability in the event of a nuclear emergency. The remaining three systems support the tracking and inspection of nuclear materials. These three groups of systems are independent of each other and have no complex interrelationships with any other systems except for dependencies on the U.S. telecommunications infrastructure.

World Wide Web Site

The NRC Web site receives an average of 75,000 hits a day. A hit is equivalent to accessing a single page or graphic. During FY 1998, the agency

continued to expand the information and improve its useability for both the public and the staff on its Web site <<http://www.nrc.gov>> by—

- redesigning the NRC Home Page to add information titled Radiation Protection, Public Participation & School Programs, and Reference Library;
- incorporating the information previously available at the Fedworld Web site, which had been maintained for NRC by the National Technical Information Service for an annual cost of \$176,000. The agency also improved access to this information by restructuring the indices by topic;
- adding new areas to the toolbar at the bottom of the page: Commission Information, What's New, Doing Business with NRC, Contacting NRC, Site Disclaimer, and Viewers and Plugins;
- responding to all e-mail inquiries from the public and the NRC staff each day, updating the telephone directory monthly, updating NRC meetings open to the public weekly, posting NRC's Weekly Information Reports regularly, posting notices of Commission meetings, and revising NRC organizational charts as needed;
- posting and maintaining the following collections (over 9,300 files total):
 - information on Commission activities: over 510 Commission meeting transcripts (for all public meetings since 1991), 340 Commission papers and staff requirements memoranda, and related documents, with both chronological and topic hyperlinked indices.
 - all generic communications to NRC licensees issued since 1971: over 2,700 files with annual hyperlinked indices for administrative letters, bulletins, circulars, generic letters, and information notices.
 - all final NRC Regulatory Guides approved by the NRC's Office of Nuclear Regulatory Research for online display, which initially included 42 guides, a main index containing background information on the guides; and links to indexes of the

10 divisions into which the guides are categorized; and 10 division indexes, each containing the number, title, and release date of every draft or final guide in that division.

- the complete text of Title 10 of the *Code of Federal Regulations* (over 3,100 HTML files, 50 graphic images, and dozens of hyperlinked indices), which includes all changes to the regulations announced in the *Federal Register* (FR) to date. This collection is updated as final rules are noticed in the FR and is therefore the most current version of NRC's regulations in an easy-to-access location.
- the complete text of NRC Inspection Manual (IM) (over 1,800 files and hyperlinked indices), which contains guidance to NRC inspectors about their activities at commercial nuclear power plants licensed by the NRC. The online collection includes all changes to the IM announced by change notice. This collection is therefore the most current version of the IM in an easy-to-access location.
- the complete text of NRC Part 21 Reports (over 800 files and four hyperlinked indices), which NRC receives from its licensees when a licensed facility, activity, or basic component fails to comply with the *Atomic Energy Act of 1954*, as amended, or other NRC regulations, as described in Part 21 of Title 10 of the *Code of Federal Regulations*. The online collection includes all reports received by NRC and is therefore the most current version of the Part 21 reports in an easy-to-access location.
- numerous technical reports about nuclear power reactors and other licensed activities, including NUREG-series publications about such diverse topics as standards for operator licensing examinations, in-service testing, guidance to materials licensees, and the comprehensive "1997 Information Digest."

Other information concerning reactors includes an information notice about Strontium-90 eye applicators, individual plant examination data, geospatial site locations, a video about a spent fuel cask gas burn at Point Beach, and an Office of the Inspector General's report titled "NRC Needs Comprehensive Plan To Resolve Regulatory Issues."

On the agency's internal Web site, the staff began posting Yellow and Weekly Announcements, which will save the agency 3400 reams of paper and \$103,500 annually.

NUREG-Series Publications

The NRC has a formal report series that comprises brochures; conference proceedings; books; and reports, including those prepared for international agreements. The OCIO staff edits many of these reports prepared by the NRC staff; is responsible for the review of all manuscripts, whether prepared by the staff or contractors for the staff; and for ensuring that they are printed in accordance with the regulations of the Joint Committee on Printing. In FY 1998, the OCIO issued 283 publications (60 % of these were written by the staff), many of which are cited in this report. Some of them are posted to the NRC's WWW site.

Agencywide Documents Access and Management System

Effective management of information is critical to NRC's performing its mission. Much of this information is in the form of documents. The Commission's policies, decisions, and bases for regulatory action depend on these documents. Today, the NRC operates in a predominantly paper-based environment with an aging, microfiche-based, legacy document-indexing system of limited functionality to support its needs. To take advantage of current technology and better accommodate the information needs of the licensees, the public, and the staff, the NRC is developing and implementing a modern, fully functional document management capability called ADAMS (Agencywide Documents Access

and Management System). The system will be composed of off-the-shelf software.

ADAMS will be an enterprise system in which NRC documents will be captured in electronic form and stored electronically in a central repository, thus ensuring the integrity and completeness of the agency's document collection. It will provide functionality to support electronic concurrence and signatures, version control, and electronic distribution. ADAMS will allow the staff to complete full-text searches and view electronic images of documents at their workstations. It will allow the public to access publicly available documents through the Internet at the NRC's Web site, using a standard Web browser.

Agencywide deployment of ADAMS is scheduled for FY 1999. The Cost-Benefit Risk Analysis conducted for the project in FY 1997 indicates that ADAMS has the potential for significant improvements in staff productivity and efficiency and will thus support its mission-related functions. Through implementation of ADAMS, the NRC should achieve a substantial increase in the level of NRC staff, licensee, and public satisfaction with the accuracy and availability of a key category of the information in agency documents.

Capital Planning and Investment Control

The *Clinger-Cohen Act of 1996* requires each Federal agency head to design and implement a Capital Planning and Investment Control (CPIC) Process for evaluating information technology (IT) projects. During FY 1998, NRC used lessons learned in working with a preliminary CPIC process during FY 1997 to finalize its CPIC process. The new process streamlines documentation requirements but ensures rigorous managerial review. Only those projects that clearly demonstrate support for NRC's mission, positive return on investment, and compatibility with NRC's IT architecture are approved for submission to the NRC's budget formulation process. The CPIC process additionally provides for monitoring the progress of ongoing projects

and for evaluating the success of completed projects.

OFFICE OF HUMAN RESOURCES

NRC Staff-Years Expended

During FY 1998, the NRC expended a total of 2,949 staff-years in carrying out its mission. Total staff-years included permanent full-time staff, permanent part-time staff, temporary employees, and consultants.

Recruitment

During this report period, the NRC continued to provide recruitment services and oversight for a variety of professional, technical, and administrative positions. The NRC recruits new employees by conducting recruitment trips to educational institutions, participating in job fairs, and advertising in various news media (e.g., newspapers, trade journals, the Internet). Applications received by the agency are managed and controlled through an automated applicant tracking system. During FY 1998, the NRC hired 116 permanent full-time employees and lost 176 permanent full-time employees, the latter figure representing an attrition rate of 6.11 percent.

Awards and Recognition

During FY 1998, the NRC continued to recognize employees for their performance. At the Annual Awards Ceremony, the NRC honored numerous employees through the presentation of awards such as the Distinguished Service Award, the Meritorious Service Award, Performance Awards, Special Act Awards, High Quality Increases, Distinguished and Meritorious Rank Awards for Senior Executive Service members, and awards for Senior Level System employees.

Benefits

The NRC provided advice and guidance to numerous employees in many areas, including retirement, life and health insurance, the Thrift Savings Plan, leave programs, and voluntary early retirement. Appropriate open seasons were conducted, retirement training was offered, and individual counseling was provided to ensure that employees understood the various benefits afforded Federal employees.

Labor Relations

On October 1, 1993, the President signed Executive Order 12871 dealing with Labor-Management Partnerships in the Federal Government. The order calls for a more cooperative and a less confrontational relationship between labor and management. In accordance with this order, the agency, together with the union, established an agency partnership committee as well as office and regional partnership committees to foster a cooperative relationship and to identify problems and propose solutions. The agency has also provided training in interest-based bargaining, helping parties work together to achieve partnership objectives.

Training and Development

During FY 1998, the Office of Human Resources provided about 1,000 onsite instructor-led training sessions and about 400 self-study sessions in IT, management and supervision, equal employment opportunity, regulatory skills, communication skills, acquisition, financial management, and special disciplines. The NRC also sponsored a wide variety of training and developmental programs conducted at colleges and universities, at other Government agencies, and in the private sector.

The agency continued to offer Program and Resource Management training to managers and supervisors to provide them with tools and

techniques for improving their managerial and supervisory skills and to communicate concepts of performance measurement and results that can be applied to their day-to-day work activities. The NRC developed a new acquisition curriculum to teach Acquisition for Project Managers and for Supervisors of Project Managers. Comprising 11 workshops, this curriculum focuses on procurement reforms resulting from the *Federal Acquisition Streamlining Act* and the *Federal Acquisition Reform Act*. The curriculum for computer applications continued to be a significant part of the NRC's training program. Instruction sessions in ACCESS database software and WordPerfect 6.1 were heavily attended. Hands-on training was provided to prepare employees for the new Windows NT upgrade with Corel 8 software. Hands-on computer training was provided to remote sites from the headquarters training facility using televideo training equipment.

The Individualized Learning Center provided employees with the latest audio/video, computer-based, and multimedia training in project management, communication, management and supervision, computer skills, secretarial skills, and employee assistance.

The agency also sponsored a number of programs to help employees develop the skills necessary to meet the NRC's future clerical, administrative, technical, and management needs. Developmental programs sponsored by the agency included—

- the Certified Professional Secretaries Program;
- the Administrative Skills Enhancement Program;
- the Computer Science Development Program;
- the Women's Executive Leadership Program;
- the Graduate Fellowship Program;
- the Intern Program; and
- the Congressional Fellowship Program.

Employee Assistance, Health, and Fitness Programs

During FY 1998, the Employee Assistance Program (EAP) continued to give individual counseling and referral assistance to NRC personnel with such problems as chemical dependency, job stress, chronic illness, sexual harassment, and family issues, as well as guidance and training to supervisors. The agency continued to make EAP services readily accessible to regional and field personnel through contractors. The EAP provided advice and guidance to supervisors on dealing with troubled employees. Education and awareness programs on a variety of topics, including stress and smoking cessation, were presented.

Hummer Associates continued to operate the health center. The staff, consisting of a full-time physician, two full-time nurses, and a medical receptionist, provided a variety of services to employees. Services included limited treatment for on-the-job illness and injury and referral to community resources; screening for diabetes, glaucoma, high blood pressure, and breast and prostate cancer; immunizations; and health awareness programs on topics such as coronary artery disease, breast cancer, prostate cancer, Lyme disease, and skin cancer. Employee visits to the health center average 30 per day. The EAP, the health center, and the fitness center jointly sponsored a health fair and continued publishing a quarterly newsletter to provide information on health, fitness, substance abuse, and mental health issues.

During FY 1998, the NRC continued offering a variety of health and fitness programs in its fitness center located in Two White Flint North. About 500 NRC employees participated in these programs offered by professionally trained exercise physiologists and health professionals.

OFFICE OF SMALL BUSINESS AND CIVIL RIGHTS

Equal Employment Opportunity Program

The Office of Small Business and Civil Rights administers the agency's Affirmative Action, Civil Rights, and Small Business Programs, and the Historically Black Colleges and Universities (HBCU) initiative. During FY 1998, major activities included biannual briefings to the Commission that presented status reports on the Agency's Equal Employment Opportunity (EEO) Program. Each briefing included a presentation by two Office Directors or Regional Administrators who provided information on the implementation of EEO programs and policies within each of their respective organizations. Implementation of a managing diversity process continued.

The managing diversity process is a long-term initiative designed to create and maintain an environment in which every employee is valued and works cooperatively to do his or her best work. During FY 1998, three sessions of the Managing Diversity Leadership Seminars were held for headquarters managers and supervisors and one session in each of the agency's four regional offices.

Small Business

To enhance information sharing with the small business community, the office initiated a series of small business forums that are conducted quarterly and installed a toll-free, 24-hour voice mail system with fax-on-demand capability.

Affirmative Action Program

The Affirmative Action Program, which includes activities of the Federal Women's Program,

develops and provides oversight of the agency's affirmative action employment initiatives related to the utilization of women, minorities, and persons with disabilities. It also includes review and assessment of program and regional offices' EEO accomplishments. Oversight is provided to the agency's seven EEO Advisory Committees, whose cooperative goal is to identify and provide recommendations on EEO-related issues that impact equal opportunities for all employees.

During FY 1998, the office staff developed the agency's Affirmative Employment Plan and issued it to all employees. This plan provides a strategic framework for identifying and pursuing EEO goals and supports the agency's managing diversity initiative. It also includes four guiding principles for achieving a standard of EEO excellence. These guiding principles have been included in the agency's operating plan and, thus, will be used as the bases for the reporting of offices' EEO accomplishments. Establishing and implementing an Affirmative Employment Plan meets the guidelines set forth by the Equal Employment Opportunity Commission (EEOC).

The NRC completed a review of the EEO Advisory Committees' recommendations that focused on three areas of primary concern: (1) perception of preselection; (2) monitoring programs that are in place to facilitate EEO; and (3) support for implementing a managing diversity process. In response to these recommendations, the agency implemented several initiatives as follows: (1) adopted a merit staffing checklist to assist managers in thinking through the merit selection process in the early stages so that selection criteria are not unduly restrictive and candidates are able to compete fairly and equitably; (2) reinstated the Agency's Intern Program to facilitate diversity in the agency's workforce; (3) and implemented a managing diversity process.

The agency's Facilitated Mentoring Program continued to provide opportunities for employees to improve their skills, productivity, and potential for advancement. Through this program, a more experienced employee is paired with an employee who requests career development guidance. Three Mentoring Program Orientation sessions were conducted for new participants to provide guidance on their roles, responsibilities, and parameters in the mentoring process. The number

of participants remains at 40 mentors and 60 mentees.

Civil Rights Program

The Civil Rights Program provides for the prompt, fair and impartial processing of discrimination complaints filed against the agency under applicable Federal statutes. Collectively, these statutes prohibit discrimination on the basis of race, color, national origin, gender, reprisal for participation in or opposition to activity protected by civil rights statutes, age (individuals age 40 and over), mental or physical disabilities. In addition, by Executive Order, sexual orientation was added as a basis for discrimination.

During FY 1998, the agency's EEO Counseling Program continued to serve as an effective means of addressing employee concerns. Our cadre of 29 EEO Counselors (18 at headquarters and 11 in the agency's four regional offices) handled 18 informal inquiries. Twelve formal complaints were filed and two settlement agreements were executed.

During this fiscal year, the staff developed a new EEO Counseling Administrative Procedures Manual, which includes standard operating procedures and resource material to assist the counselors in better performing their duties and to ensure greater consistency in their handling of EEO activities. A summary of complaint activity during this period is as follows:

STATUS OF COMPLAINTS FISCAL YEAR 1998	
TOTAL COMPLAINTS PENDING AT BEGINNING OF FISCAL YEAR	7
Filed during fiscal year	12
Remands	2
Closed during fiscal year	9
Dismissals	3
Settlements	3
Final agency decision of no discrimination	3
TOTAL COMPLAINTS PENDING AT END OF FISCAL YEAR	12

Small Business Program

The agency continued its commitment to small businesses, Section 8(a) businesses, small disadvantaged businesses, and small women-owned businesses. At the beginning of FY 1998, the "Forecast of Procurement Opportunities" was published that identified anticipated procurement actions for that fiscal year. This information was made available on the NRC's World Wide Web (WWW) site at <<http://www.nrc.gov>>. During FY 1998, the staff initiated Quarterly Small Business Forums to provide opportunities for representatives of small business concerns to discuss their capabilities and skills with agency project managers. A toll-free, 24-hour voice mail system that has fax-on-demand capability was installed that provides recorded information on doing business with the NRC and a schedule of Small Business Forums. The system can be accessed by calling 1-800-903-SBCR.

Historically Black Colleges and Universities

The principal goals of the Historically Black Colleges and Universities (HBCUs) Research Participation Program are to enhance academic studies in science, mathematics, and engineering, and to increase the number of scientists, engineers, and related professionals. The program introduces HBCU faculty and graduate and undergraduate students to the research and development activities of the NRC. The program provides participants a mechanism by which to (1) become familiar with research areas and the needs of the NRC; (2) participate in scientific, engineering, and other research and development activities related to NRC's mission; and (3) gain experience that enhances participants' academic and scientific credentials. The agency's HBCU Program is conducted through a cooperative agreement with the Oak Ridge Institute for Science and Education.

During FY 1998, the agency awarded \$227,862 in research grants to 16 faculty members and 8 students at 15 HBCUs, thus exceeding its goal of \$200,000 by 14 percent. Participants were assigned

to NRC technical assistance projects at 10 different DOE laboratories where a majority of this work is performed. Assignments were made on the basis of the participants' major fields of study and interests. Six participants were assigned to on-campus research projects, and three of these projects are scheduled for completion in FY 1999.

OFFICE OF ADMINISTRATION

Facilities Program

During FY 1998, the Office of Administration (ADM) continued the interior renovation of the One White Flint North building. The project consists of replacing all the interior finishes that have deteriorated during the 10 years NRC has occupied the building. It also provides work space enhancements, such as supplemental air conditioning in large conference rooms, revised office configurations, and new traffic patterns to facilitate movement of employees and visitors. Improvements of physical security include additional alarms, card readers, and guard patrol verification stations. During FY 1998, work was completed on floors 5, 11, 12, and 16. This project will be completed in FY 2000.

The NRC successfully coordinated installation of a major upgrade of the air conditioning system in the One White Flint North building to replace deteriorating pipes and install new air exchange equipment to improve air quality.

Security Program

As a part of the Department of Justice's (DOJ's) facilities security upgrades following the Oklahoma City bombing, NRC replaced the existing black and white closed-circuit television cameras with a new generation of higher resolution color cameras and installed additional cameras throughout the White Flint North complex. The Headquarters Central Alarm Station underwent extensive upgrades, including

the installation of equipment for monitoring the new cameras. This installation was completed in June 1998.

In support of the Office of Nuclear Material Safety and Safeguards, the staff participated in actions leading to the privatization of the U. S. Enrichment Corporation (USEC). Specifically, it developed requirements that would restrict foreign control or ownership of the USEC, thus avoiding the possibility of compromising classified information pertaining to the corporation's operations.

The staff also conducted a reactive security inspection of USEC's Paducah Gaseous Diffusion Plant in February 1998, and an initial inspection of the USEC Headquarters in June 1998 to effect the transfer of security oversight from the U.S. Department of Energy (DOE) to NRC.

Property Management Program

The NRC conducted an FY 1998 headquarters inventory of sensitive items and equipment valued at more than \$300. More than 20,000 equipment items were inventoried. Regional offices conducted self-inventories and submitted fully reconciled reports to the headquarters staff. A supply module was added to the NRC's automated Property and Accounting System to improve control and accountability for furniture and supply stock assets.

Executive Order 12999, "Improving Mathematics and Science Education in Support of National Education Goals," directs Federal agencies to the maximum extent possible to identify and transfer excess education-related equipment to elementary and secondary schools. Under these guidelines, the NRC established a program for donating used and obsolescent computer equipment to school systems nationwide. In FY 1998, the NRC donated more than 1,241 pieces of computer equipment, including color monitors, system units, and printers.

Recycling Program

In FY 1998, the NRC Headquarters Recycling Program generated more than \$42,000 in revenue through an area-wide contract administered by the General Services Administration. The revenue generated by the program is available for agency use on a discretionary basis and will be used for employee programs, including tuition assistance for employees whose children would otherwise be unable to attend the onsite child care center.

Rulemaking and Directives

The staff provided rulemaking review support for 220 rulemaking actions, docketed four petitions for rulemaking, and published 45 rulemaking documents in the *Federal Register* during FY 1998.

The NRC submitted 100 percent of its general notices in electronic form to the Office of the Federal Register for publication, resulting in a savings of \$56,274 during FY 1998.

Small Business Regulatory Enforcement Fairness Act. On March 29, 1996, President Clinton signed the *Small Business Regulatory Enforcement Fairness Act*. The act ensures that Federal agencies notify Congress of "major actions" (as defined by the act). In FY 1998, NRC submitted 57 final actions to the Office of Management and Budget for review. One action, NRC's 100-percent fee recovery rule, was determined to be a "major" rule under the act.

Contract Management

During FY 1998, the NRC continued to improve the efficiency of the procurement process through a variety of electronic commerce activities and through streamlining measures under its procurement reinvention laboratory. ADM's Home Page on NRC's WWW internal site provides direct links to electronic catalogs, such as GSA Advantage!, the Air Force Country Store, and the UNICOR catalog, enabling staff to procure goods and services efficiently. In another initiative, the OMB sent NRC's electronic streamlining procurement innovation, "Focused

Source Selection,” to Congress for review. This innovation represents a streamlined approach to competitive acquisitions, using the Internet and negotiating with the best-rated proposer. NRC plans to implement this innovation after the required 270-day congressional review period has elapsed. Use of oral presentations in lieu of lengthy written proposals continues to improve efficiency in the procurement process at NRC. In recognition of its pioneering efforts in the use of oral presentations, NRC’s Acquisition Reform Team was nominated to receive a National Performance Review “hammer” award in FY 1998. The WWW also was used for an extensive market survey, using the *Commerce Business Daily* (CBD) Internet (CBDNet) and ADM’s Web sites, to determine the availability of contractors and educational institutions to assist the NRC in areas in which sources could be limited for conflict-of-interest reasons if NRC’s regulation of DOE’s facilities is expanded.

The NRC continues to provide extensive training in the use of streamlining measures to help NRC

program offices and procurement personnel improve processing times for simplified acquisitions, competitive contract awards, and contract closeout activities. During FY 1998, NRC offered three satellite broadcasts and three in-house training opportunities for procurement and technical staff, including courses on Past Performance, Performance-Based Service Contracting, and Streamlined Source Selection.

Effective implementation of procurement reforms resulted in timely contract awards for obligations totaling \$73 million. The agency also processed 5,093 purchase-card transactions totaling \$2.7 million for an estimated savings of \$255,000 during FY 1998. Implementation of a new contract information system has enhanced availability of procurement data to staff and managers and has improved the accuracy of the data. NRC continued to conduct reviews of Department of Energy laboratory agreements to ensure effective oversight for placement and monitoring of the agency’s work performed under such agreements.

Appendix

NRC Organization

(Current as of September 30, 1998)

COMMISSIONERS

Shirley Ann Jackson, Chairman
Nils J. Diaz
Edward McGaffigan

Inspector General

Hubert T. Bell

Chief Financial Officer

Jesse L. Funches

Chief Information Officer

Anthony J. Galante

The Commission Staff

Office of Commission Appellate Adjudication—John F. Cordes, Jr., Acting Director
Office of Congressional Affairs—Dennis K. Rathbun, Director
Office of the General Counsel—Karen D. Cyr, General Counsel
Office of International Programs—Carlton R. Stoiber, Director
Office of Public Affairs—William M. Beecher, Director
Secretary of the Commission—John C. Hoyle, Secretary

Executive Director for Operations

Executive Director for Operations—L. Joseph Callan
Deputy Executive Director for Regulatory Effectiveness—William D. Travers
Deputy Executive Director for Regulatory Programs—Hugh L. Thompson, Jr.
Deputy Executive Director for Management Services—Patricia G. Norry
Assistant for Operations—James L. Blaha

Program Offices

Office of Nuclear Material Safety and Safeguards—Carl J. Paperiello, Director
Office of Nuclear Reactor Regulation—Samuel J. Collins, Director
Office of Nuclear Regulatory Research—Ashok C. Thadani, Director

NRC Organization (continued)

EDO Staff Offices

Office of Administration—Edward L. Halman, Director
 Office for Analysis and Evaluation of Operational Data—Thomas T. Martin, Director
 Office of Enforcement—James Lieberman, Director
 Office of Investigations—Guy P. Caputo, Director
 Office of Human Resources—Paul E. Bird, Director
 Office of Small Business and Civil Rights—Irene P. Little, Director
 Office of State Programs—Richard L. Bangart, Director

Regional Offices

Region I, Philadelphia, Pennsylvania—Hubert J. Miller, Regional Administrator
 Region II, Atlanta, Georgia—Luis A. Reyes, Regional Administrator
 Region III, Chicago, Illinois—James L. Caldwell, Acting Regional Administrator
 Region IV, Dallas, Texas—Ellis W. Merschoff, Regional Administrator

Other Offices

Advisory Committee on Nuclear Waste—B. John Garrick, Chairman
 Advisory Committee on Reactor Safeguards—Robert L. Seale, Chairman
 Atomic Safety and Licensing Board Panel—B. Paul Cotter, Jr., Chief Administrative Judge

RESPONSIBILITIES OF THE OFFICES, THE REGIONS, AND THE ADVISORY COMMITTEES AND LICENSING PANELS

Office of the Inspector General

The Office of the Inspector General is an independent and objective unit that conducts and supervises audits and investigations relating to NRC programs and operations, identifying ways to improve agency activities resulting from the detection and prevention of instances of fraud, waste, and abuse; and, keeps the head of the agency and the Congress fully and currently informed of serious issues and concerns relating to the administration of programs.

Responsibilities of the Executive Council

The Chief Financial Officer (CFO) oversees the financial management of NRC's programs and operations and provides advice to the Chairman on financial management matters. The CFO establishes financial management policy for the agency and provides policy guidance to senior managers on the budget and all other financial management activities, including systems, personnel, structure and functions, performed by component financial management organizations; oversees the development and maintenance of financial management and accounting systems to provide reliable information for internal and external financial management reporting; establishes agency-wide financial data and reporting format requirements, and provides an agency-wide management control program for financial and program managers that provides for timely corrective actions regarding material weaknesses disclosed through audit findings and

reports provided under the *Federal Managers' Financial Integrity Act*.

The Chief Information Officer (CIO) plans, directs, and oversees the NRC's information resources, including information technology infrastructure and delivery of information management services, to meet the mission and goals of the agency. The CIO provides principal advice to the Chairman to ensure that Information Technology (IT) is acquired and information resources across the agency are managed in a manner consistent with Federal Information Resources Management (IRM) laws and regulations; assists senior management in recognizing where information technology can add value while improving NRC operations and services delivery; directs the implementation of a sound and integrated IT architecture to achieve NRC's strategic and IRM goals; monitors and evaluates the performance of information technology and information management programs based on applicable performance measures and assesses the adequacy of IRM skills of the agency; and provides guidance and oversight for the selection, control, and evaluation of information technology investments.

The Executive Director for Operations (EDO) is the chief operational and administrative officer of the Commission and is authorized and directed to discharge licensing, regulatory, and administrative functions of the NRC and to take actions necessary for day-to-day operations of the agency. The EDO supervises and coordinates policy development and operational activities of EDO staff and program offices and implements Commission policy directives pertaining to these offices.

The Commission Staff

The Office of Commission Appellate Adjudication is responsible for monitoring cases pending before presiding officers; for providing the Commission with an analysis of any adjudicatory matter requiring a Commission decision (e.g., petitions for review of Initial Licensing Board decisions, certified questions, interlocutory referrals, staff requests), including available options; for the drafting of any necessary decisions, pursuant to

the Commission's guidance, after presentation of options; and for consulting with the Office of the General Counsel in identifying options to be presented to the Commission and in drafting the final decision to be presented to the Commission.

The Office of Congressional Affairs provides advice and assistance to the Chairman, the Commission, and the NRC staff on all NRC relations with Congress and views of Congress toward NRC policies, plans, and activities; maintains liaison with congressional committees and members of Congress on matters of interest to the NRC; serves as primary contact for all NRC communications with Congress, reviewing and concurring in all outgoing correspondence to members of Congress; coordinates NRC internal activities with Congress; plans and develops NRC's legislative program; and monitors legislative proposals, bills, and hearings.

The Office of the General Counsel directs matters of law and legal policy, providing opinions, advice, and assistance to the Commission and staff with respect to all activities of the agency.

The Office of International Programs provides advice and assistance to the Chairman, the Commission, and the NRC staff on international issues. The office formulates and recommends policies concerning nuclear exports and imports, international safeguards, international physical security, non-proliferation matters, and international cooperation and assistance in nuclear safety and radiation protection. The office plans, develops, and implements programs to carry out policies established in these areas; plans, develops, and manages international nuclear safety information exchange programs; and coordinates international research agreements. The office obtains, evaluates, and uses pertinent information from other NRC and U.S. Government offices in processing nuclear export and import license applications; establishes and maintains working relationships with individual countries and international nuclear organizations, as well as other U.S. Government agencies; and ensures that all international activities carried out by the Commission and the staff are properly coordinated internally and Government-wide and are consistent with NRC and U.S. policies.

The Office of Public Affairs develops policies, programs, and procedures for informing the public of NRC activities; prepares, clears, and

disseminates information to the public and the news media concerning NRC policies, programs, and activities; keeps NRC management informed of media coverage of activities of interest to the agency; plans, directs, and coordinates the activities of public information staffs located at the Regional Offices; conducts a cooperative program with the schools; and carries out assigned activities in the area of consumer affairs.

The Office of the Secretary of the Commission provides executive management services to support the Commission and to implement Commission decisions; advises and assists the Commission and staff on planning, scheduling, and conducting Commission business; prepares the Commission's meeting agenda; codifies Commission decisions in memoranda directing staff action, monitors staff compliance of pending actions, and tracks commitments through the automated Commission tracking system; manages the staff paper and COMSECY systems; initiates and monitors the status of office automation initiatives into the Commission's administrative system; processes and controls Commission correspondence; maintains the Commission's official records and acts as Freedom of Information coordinator for Commission records; maintains the official adjudicatory and rulemaking dockets of the Commission and serves Commission and Atomic Safety and Licensing Board issuances in all adjudicatory matters and public proceedings; directs and administers the NRC Historical Program; and functions as the Federal Advisory Committee Management Officer.

Responsibilities of the Program Offices

The Office of Nuclear Material Safety and Safeguards licenses, inspects, and regulates facilities and materials associated with processing, transporting, and handling nuclear materials, as well as disposing of nuclear waste and regulating uranium recovery facilities. The office also regulates related facility decommissioning. The safeguard staff of the office reviews and assesses protection against potential threats, thefts, and sabotage for licensed facilities, working closely

with other NRC offices in coordinating safety and safeguards programs and in recommending research, standards, and policy options necessary for their successful operations.

The Office of Nuclear Reactor Regulation ensures the public health and safety through licensing and inspection activities at all nuclear power reactor facilities in the United States. The office oversees all aspects of licensing and inspection of manufacturing, production, and utilization facilities (except for facilities reprocessing fuel and performing isotopic fuel enrichment), and receipt, possession, and ownership of source, byproduct, and special nuclear material used or produced at facilities licensed under 10 CFR Part 50. The office develops policy and inspection guidance for programs assigned to the regional offices and assesses the effectiveness and uniformity of the Regions' implementation of those programs. The office identifies and takes action in coordination with the regional offices regarding conditions and licensee performance at such facilities that may adversely affect public health and safety, the environment, or the safeguarding of nuclear facilities and assesses and recommends or takes action in response to incidents or accidents. The office is responsible for licensing issues and regulatory policy concerning reactor operators, including the initial licensing examination and requalification examinations, emergency preparedness, including participation in emergency drills with Federal, State, and local agencies; radiation protection, security and safeguard at such facilities, including fitness for duty; and the inspection of nuclear supplier facilities. The office also conducts technical review, certification, and licensing of advanced nuclear reactor facilities and renews current power reactor operating licenses.

The Office of Nuclear Regulatory Research plans, recommends, and implements programs of nuclear regulatory research, standards development, and resolution of safety issues for nuclear power plants and other facilities regulated by the NRC. It develops and promulgates all technical regulations; coordinates research activities within and outside the NRC, including appointment of staff to committees and conferences; and coordinates national volunteer standards efforts.

The Regional Offices are under the supervision and direction of the Executive Director for Operations and carry out NRC regulatory programs originating in the various Headquarters offices.

Responsibilities of the Support Staff Offices

The Office of Administration directs the agency's programs for contracting and procurement; transportation services; security of personnel and facilities; rulemaking support; management of space and equipment; and other administrative services.

The Office for Analysis and Evaluation of Operational Data provides agency coordination for the collection, storage, and retrieval of operational data associated with licensed activities, analyzes and evaluates such operational experience and feeds back the lessons of that experience to NRC licensing, standards, and inspections activities staff. The office is also responsible for the NRC incident response program and the Technical Training Center, as well as the tracking of licensee performance indicators.

The Office of Enforcement develops policies and programs for the enforcement of NRC requirements, manages major enforcement actions, and assesses the effectiveness and uniformity of regional enforcement actions.

The Office of Human Resources plans and implements NRC policies, programs, and services to provide for the effective organization, recruitment, placement, utilization, and development of the agency's human resources.

The Office of Investigations conducts, supervises, and assures quality control of investigations of licensees, applicants, contractors, or vendors, including the investigation of all allegations of wrongdoing by other than NRC employees and contractors. The office develops policy, procedures, and standards for these activities.

The Office of Small Business and Civil Rights develops and implements the NRC's program in

accordance with the *Small Business Act*, as amended, ensuring that appropriate consideration is given to small business firms, including women-owned and minority businesses. The office develops and recommends NRC policy providing for equal employment opportunity, and develops, monitors, and evaluates the affirmative action program to ensure compliance with the policy. The office also serves as contact with local and national public and private organizations with related interests and administers the Historically Black Colleges and Universities Program.

The Office of State Programs is responsible for establishing and maintaining good community relations between the NRC, the States, local governments, other Federal agencies, and Indian Tribe organizations; serves as primary contact for policy matters between the NRC and these groups; keeps the agency apprised of activities of these groups as they may affect NRC, and conveys to NRC management the groups' views on NRC policies, plans, and activities; coordinates liaison with other Federal agencies through the Federal Liaison Program; administers the State Agreements Program; provides training and technical assistance to Agreement States; integrates Federal regulatory activities with the States; and maintains cooperative and liaison activities with the States.

Other Offices

The Advisory Committee on Nuclear Waste was established by the Nuclear Regulatory Commission in 1988 to advise the Commission on nuclear waste disposal facilities, as directed by the Commission.

The Advisory Committee on Reactor Safeguards is a statutory committee established to advise the Commission on safety aspects of proposed and existing nuclear facilities and on the adequacy of proposed reactor safety standards and to perform such other duties as the Commission may request. The committee conducts a continuing study of reactor safety research and submits an annual report to the Congress. The committee also administers a fellowship program.

The Atomic Safety and Licensing Board Panel is a panel of lawyers and others with expertise in

various technical fields from which three-member Licensing Boards are drawn to conduct public hearings and make such intermediate or final decisions as the Commission may authorize in proceedings to grant, amend, suspend, or revoke NRC licenses.

The Advisory Committee on the Medical Uses of Isotopes, established in 1958, is composed of qualified physicians and scientists, employed under yearly personnel services contracts. The committee considers medical questions referred to

it by the NRC staff and gives expert opinions on the medical uses of radioisotopes. The committee also advises the NRC staff, as required, on matters of policy.

The Licensing Support System Advisory Review Panel, established in 1989, advises the NRC's Licensing Support System Administrator and the Department of Energy on selected aspects of the design, development, and operation of the support system.

Addendum to the Appendix

NRC Organization

(Current as of February 19, 1999)

COMMISSIONERS

Shirley Ann Jackson, Chairman
Greta J. Dicus
Nils J. Diaz
Edward McGaffigan
Jeffrey Merrifield

Inspector General

Hubert T. Bell

Chief Financial Officer

Jesse L. Funches

Chief Information Officer

Anthony J. Galante

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Office of Commission Appellate Adjudication—John F. Cordes, Jr., Acting Director
Office of Congressional Affairs—Dennis K. Rathbun, Director
Office of the General Counsel—Karen D. Cyr, General Counsel
Office of International Programs—Janice Dunn Lee, Acting Director
Office of Public Affairs—William M. Beecher, Director
Secretary of the Commission—Annette L. Vietti-Cook, Secretary

Executive Director for Operations

Executive Director for Operations—William D. Travers
Deputy Executive Director for Regulatory Effectiveness—Malcolm R. Knapp
Deputy Executive Director for Regulatory Programs—Frank J. Miraglia
Deputy Executive Director for Management Services—Patricia G. Norry
Assistant for Operations—James L. Blaha

Program Offices

Office of Nuclear Material Safety and Safeguards—Carl J. Paperiello, Director
Office of Nuclear Reactor Regulation—Samuel J. Collins, Director
Office of Nuclear Regulatory Research—Ashok C. Thadani, Director

EDO Staff Offices

Office of Administration—Michael L. Springer, Director
Office of Enforcement—James Lieberman, Director
Office of Investigations—Guy P. Caputo, Director
Office of Human Resources—Paul E. Bird, Director
Office of Small Business and Civil Rights—Irene P. Little, Director
Office of State Programs—Paul H. Lohaus, Director

Regional Offices

Region I, Philadelphia, Pennsylvania—Hubert J. Miller, Regional Administrator
Region II, Atlanta, Georgia—Luis A. Reyes, Regional Administrator
Region III, Chicago, Illinois—James E. Dyer, Regional Administrator
Region IV, Dallas, Texas—Ellis W. Merschoff, Regional Administrator

Other Offices

Advisory Committee on Nuclear Waste—B. John Garrick, Chairman
Advisory Committee on Reactor Safeguards—Dana A. Powers, Chairman
Atomic Safety and Licensing Board Panel—G. Paul Bollwerk III, Acting Chief Administrative Judge

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Federal Recycling Program

ISBN 0-16-050102-4



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