

---

# BUDGET ESTIMATES FISCAL YEAR 1993

---

January 1992

U.S. Nuclear Regulatory Commission

---



---

**BUDGET  
ESTIMATES  
FISCAL YEAR  
1993**

---

January 1992

U.S. Nuclear Regulatory Commission



# BUDGET ESTIMATES FISCAL YEAR 1993

---

January 1992

U.S. Nuclear Regulatory Commission

---



Available from

Superintendent of Documents  
U.S. Government Printing Office  
P.O. Box 37082  
Washington D.C. 20013-7082

and

National Technical Information Service  
Springfield , VA 22161

---

**BUDGET  
ESTIMATES  
FISCAL YEAR  
1993**

---

January, 1992

U.S. Nuclear Regulatory Commission



BUDGET ESTIMATES FOR THE  
U.S. NUCLEAR REGULATORY COMMISSION  
FISCAL YEAR 1993

	<u>Pages</u>
1. Summary . . . . .	1-22
2. Reactor Safety and Safeguards Regulation . . . . .	23-44
3. Nuclear Safety Research . . . . .	45-80
4. Nuclear Material and Low-Level Waste Safety and Safeguards Regulation . . . . .	81-96
5. High-Level Nuclear Waste Regulation . . . . .	97-112
6. Special and Independent Reviews, Investigations, and Enforcement . . . . .	113-130
7. Nuclear Safety Management and Support . . . . .	131-162
8. Inspector General . . . . .	163-166
9. Special Supporting Tables . . . . .	167-179

## TABLE OF CONTENTS

	Page
<b>1. SUMMARY . . . . .</b>	<b>1-22</b>
Introduction . . . . .	1
Budget Summary . . . . .	2
Explanation of Resource Changes . . . . .	2-5
Appropriations and Financial Summary . . . . .	6-15
Total NRC Budget Authority . . . . .	16
Summary of Budget Authority by Function . . . . .	17
Summary of Budget Authority by Program . . . . .	18
Summary of Staffing by Program . . . . .	19
FY 1993 Dollar Distribution . . . . .	20
FY 1993 Staff Distribution . . . . .	21
<b>2. REACTOR SAFETY AND SAFEGUARDS REGULATION . . . . .</b>	<b>23-44</b>
Total Funds and Staff . . . . .	24
Explanation of Resource Changes . . . . .	24
Description of Program . . . . .	25-26
Program Support Funds and Staff . . . . .	26
Reactor Licensing . . . . .	27
Resource Changes . . . . .	27
Power Reactor Applications and Inspections . . . . .	27-28
Standardized Reactor Design Applications . . . . .	28
Reactor License Renewal Applications . . . . .	29
Improvements to Regulations . . . . .	29
Human Performance in Reactor Safety . . . . .	30
Resource Changes . . . . .	30
Human Performance Evaluation . . . . .	30-31
Licensing and Examination of Reactor Operators . . . . .	31-32
Reactor Operations and Safeguards Inspections . . . . .	33
Resource Changes . . . . .	33
Resident Inspections . . . . .	33-34
Region-Based Inspections . . . . .	34
Specialized Inspections . . . . .	35-36
Operating Reactor License Maintenance and Evaluation . . . . .	37
Resource Changes . . . . .	37
Project Management . . . . .	38
Licensing Activities Safety Evaluations . . . . .	38-39
Regulatory Improvements . . . . .	39
Reactor Performance Evaluation . . . . .	39-40
Evaluation of Licensee Performance and Maintenance . . . . .	40-42
Reactor Accident Management Evaluation . . . . .	42
Other-Than-Power-Reactor Applications . . . . .	43

CONTENTS

	Page
<b>3. NUCLEAR SAFETY RESEARCH . . . . .</b>	<b>45-80</b>
Total Funds and Staff . . . . .	46
Explanation of Resource Changes . . . . .	46-47
Description of Program . . . . .	47-48
Program Support Funds and Staff . . . . .	48
Reactor Licensing Support . . . . .	49
Resource Changes . . . . .	49
Standard Reactor Designs . . . . .	50-53
Reactor Aging and License Renewal . . . . .	53-58
Reactor Regulation Support . . . . .	59
Resource Changes . . . . .	59
Human Reliability . . . . .	60-61
Plant Performance . . . . .	61-63
Reactor Accident Analysis . . . . .	63-68
Safety Issue Resolution and Regulation Development . . . . .	69-74
Nuclear Materials Licensing and Regulation Support . . . . .	75
Nuclear Materials . . . . .	75-77
Low-Level Waste Disposal . . . . .	77-80
 <b>4. NUCLEAR MATERIAL AND LOW-LEVEL WASTE SAFETY AND SAFEGUARDS REGULATION . . . . .</b>	 <b>81-96</b>
Total Funds and Staff . . . . .	82
Explanation of Resource Changes . . . . .	82
Description of Program . . . . .	83-84
Program Support Funds and Staff . . . . .	84
Nuclear Material Safety . . . . .	85
Resource Changes . . . . .	85
Fuel Facility and Spent Fuel Storage Licensing and Inspection . . . . .	85-86
Licensing and Inspection of Nuclear Material Users . . . . .	86-88
Event Evaluation . . . . .	88
Nuclear Material Transportation and Safeguards . . . . .	89
Resource Changes . . . . .	89
Regulating the Transport of Nuclear Materials . . . . .	89-90
Safeguards Licensing and Inspection . . . . .	90-91
Threat and Event Assessment and International Safeguards . . . . .	91-92
Low-Level Waste . . . . .	93
Resource Changes . . . . .	93
Low-Level Waste Disposal Licensing and Inspection . . . . .	93-94
Uranium Recovery Licensing and Inspection . . . . .	94-95
Decommissioning . . . . .	95-96
 <b>5. HIGH-LEVEL NUCLEAR WASTE REGULATION . . . . .</b>	 <b>97-112</b>
Total Funds and Staff . . . . .	98
Explanation of Resource Changes . . . . .	98-99
Description of Program . . . . .	99-100



## CONTENTS

	Page
Program Support Funds and Staff . . . . .	100
High-Level Waste Licensing . . . . .	101
Resource Changes . . . . .	101
High-Level Waste Repository Licensing . . . . .	102
Guidance and Review Capability Development . . . . .	102-103
Quality Assurance . . . . .	103
Site Characterization Reviews . . . . .	104
High-Level Waste Storage and Transportation . . . . .	104-105
Assessing the Safety of High-Level Waste Disposal . . . . .	106
Resource Changes . . . . .	106-108
Independent Safety Advice and Adjudicatory Reviews . . . . .	109
Advisory Committee on Nuclear Waste . . . . .	109
Office of the General Counsel . . . . .	110
Licensing Support System . . . . .	111-112
<b>6. SPECIAL AND INDEPENDENT REVIEWS, INVESTIGATIONS, AND ENFORCEMENT . . . . .</b>	<b>113-130</b>
Total Funds and Staff . . . . .	114
Explanation of Resource Changes . . . . .	114
Description of Program . . . . .	115
Program Support and Administrative Support Funds and Staff . . . . .	115
Special Safety Reviews . . . . .	116
Diagnostic Evaluations . . . . .	116
Incident Investigation . . . . .	116-117
NRC Incident Response . . . . .	117-118
Technical Training Center . . . . .	118-120
Operational Experience Evaluation . . . . .	121
Operational Data Analysis . . . . .	121-122
Performance Indicators . . . . .	122-123
Operational Data Collection and Dissemination . . . . .	123-124
Independent Safety Reviews and Advice . . . . .	125
Advisory Committee on Reactor Safeguards . . . . .	125-126
Advisory Committee on Nuclear Waste . . . . .	126
Independent Adjudicatory Reviews . . . . .	127
External Investigations . . . . .	128
Enforcement . . . . .	129
<b>7. NUCLEAR SAFETY MANAGEMENT AND SUPPORT . . . . .</b>	<b>131-162</b>
Total Funds and Staff . . . . .	132
Explanation of Resource Changes . . . . .	132-133
Description of Program . . . . .	134
Program Support and Administrative Support Funds and Staff . . . . .	135
Commission . . . . .	136
Executive Director for Operations . . . . .	137
Resource Changes . . . . .	137
Policy Planning . . . . .	138
Resource Changes . . . . .	138

## CONTENTS

	Page
Consolidation . . . . .	139
Resource Changes . . . . .	139
General Counsel . . . . .	140
Licensing and Regulation . . . . .	140
Hearings, Enforcement, and Administration . . . . .	140-141
Commission Appellate Adjudication . . . . .	142
Congressional Affairs . . . . .	143
Public Affairs . . . . .	144
International Programs . . . . .	145
Resource Changes . . . . .	145
State Programs . . . . .	146
Controller . . . . .	147
Resource Changes . . . . .	147
Budget and Analysis . . . . .	148
Accounting and Finance . . . . .	148
Administration . . . . .	149
Resource Changes . . . . .	149
Contracts and Property Management . . . . .	149-150
Security . . . . .	150
Freedom of Information and Publications Services . . . . .	150-151
Information Resources Management . . . . .	152
Resource Changes . . . . .	152
Policy, Planning, and Management Direction . . . . .	152-153
Computer and Telecommunications Services . . . . .	153
Telecommunications Services . . . . .	153
Information Systems Development and Maintenance . . . . .	153
Office Automation and Network Development . . . . .	153
Information Support Services . . . . .	153-154
Information and Records Management Services . . . . .	154
Document Management Services . . . . .	154
Information Technology Services . . . . .	154
Secretariat . . . . .	155
Personnel and Training . . . . .	156
Resource Changes . . . . .	156
Personnel . . . . .	156-157
Training and Development . . . . .	157
NRC-Wide Support . . . . .	157
Small and Disadvantaged Business Utilization and Civil Rights . . . . .	158
Resource Changes . . . . .	158
Small and Disadvantaged Business Utilization . . . . .	158
Civil Rights . . . . .	159
Federal Women's Program . . . . .	159
Regional Administrative Support . . . . .	160
Resource Changes . . . . .	160
Support Services . . . . .	160-161

CONTENTS

	Page
8. INSPECTOR GENERAL . . . . .	163-166
Total Funds and Staff . . . . .	164
Explanation of Resource Changes . . . . .	164-165
Description of Program . . . . .	165
Audit Program . . . . .	165
Investigations and Inspection Program . . . . .	166
Planning and Analysis Program . . . . .	166
9. SPECIAL SUPPORTING TABLES . . . . .	167-179
Introductory Summary . . . . .	169
Legislative Program Projections . . . . .	170
Consulting Services by Program . . . . .	171-173
Report on Drug Testing Activities . . . . .	174
Report on Metrication . . . . .	175
IG Evaluation of Consulting Services . . . . .	176-177
IG Report on Public Law 101-121, Anti-Lobbying Act . . . . .	178-179

## **SUMMARY**



## INTRODUCTION

The U.S. Congress has determined that the safe use of nuclear materials for peaceful purposes is a legitimate and important national goal. It has entrusted the NRC with the primary Federal responsibility for achieving that goal. The NRC's mission, therefore, is to ensure adequate protection for the public health and safety, the common defense and security, and the environment in the use of nuclear materials in the United States.

The NRC's scope of responsibility includes regulation of commercial nuclear power plants; research, test, and training reactors; fuel cycle facilities; medical, academic, and industrial uses of nuclear materials; and the transport, storage, and disposal of nuclear materials and wastes. The NRC carries out its mission by setting standards and requirements that licensees must meet to design, construct, and operate safe facilities, in the form of rules, license conditions, and regulatory guidance; inspecting facilities and taking enforcement action, as necessary, to ensure that such standards are followed; and conducting research to support, confirm, or refine judgments used in regulatory decisions. The technologies involved in the use of nuclear energy are relatively new and complex. Regulatory decisions often require conservatism to account for technical uncertainty. Conservatism should be modified appropriately as increased understanding of physical phenomena and interactions is achieved. Further, essential functions must be maintained through appropriate combinations of high component and system reliability, redundancy, and diversity to provide multiple barriers to the release of radiation (defense-in-depth).

---

ALL DOLLAR AMOUNTS IN THIS DOCUMENT REPRESENT BUDGET AUTHORITY ENACTED FOR FY 1991, ESTIMATED FOR FY 1992, AND REQUESTED FOR FY 1993.

THIS INFORMATION DIFFERS FROM PREVIOUS NRC BUDGETS WHICH WERE SUBMITTED BASED ON OBLIGATIONS.

---

Summary

BUDGET SUMMARY

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

**FUNDS:** The NRC's FY 1993 budget request is \$550,000,000. This is an increase of \$37,500,000 above FY 1992.

**FTE:** The NRC's FY 1993 budget request is 3,377 FTE staff. This is an increase of 42 FTEs above FY 1992.

TOTAL NRC BUDGET AUTHORITY BY FUNCTION

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u> <u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Salaries and Benefits	\$223,097	\$243,658	\$260,400	\$16,742
Program Support	147,001	166,820	177,790	10,970
Administrative Support	80,304	88,407	97,490	9,083
Travel	<u>14,592</u>	<u>13,615</u>	<u>14,320</u>	<u>705</u>
Total	\$464,994	\$512,500	\$550,000	\$37,500

EXPLANATION OF RESOURCE CHANGES

<b>Maintain Current Services:</b>	<u>Change From</u> <u>FY 1992</u>
Personnel Compensation	\$13,367
Administrative Price Increases	3,983
Headquarters Consolidation	<u>5,700</u>
Subtotal	<u>\$23,050</u>

## Summary

---

### Program Requirements:

	Change From <u>FY 1992</u>
Advanced Standard Reactor Designs	\$11,895
Reactor Aging and License Renewal	2,195
Reactor Inspections, Oversight, and Regulatory Support	-5,465
High-Level Waste Management	2,030
Planning and Personnel Management	675
Financial and Contract Management	2,475
Inspector General	645
Subtotal	<u>\$14,450</u>
Total	\$37,500

**Personnel Compensation** **\$13,367,000**

This increase reflects the annualization of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase anticipated in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System. (Note: salaries and benefits increases due to increased staffing are included in the program requirements descriptions.)

**Administrative Price Increases** **\$3,983,000**

These increases result from an increase of about 7-percent in building rent (NRC has no control over increases mandated by the General Services Administration (GSA)), additional costs associated with permanent change-of-station moves, increased transportation and per diem costs, increased cost of Government Printing Office and other printing services, increased Office of Personnel Management charges for security investigations, increased GSA charges for security guards, increased costs for supplies and materials, and higher costs for employee training.

**Headquarters Consolidation** **\$5,700,000**

Excavation has recently begun for construction of a second building to consolidate the remainder of the NRC's headquarters staff in Rockville, Maryland. The GSA requires the NRC to pay for certain costs related to the construction and occupancy of the building (e.g., space planning, security systems, interior finishing, systems furniture, and telecommunications networks). This increase will provide funds for NRC to pay for the required expenses.



## Summary

---

### **Advanced Standard Reactor Designs**

**\$11,895,000**

A significant share of the requested increase is required to support NRC's certification of advanced standard nuclear power plant designs. This increase will support efforts to develop sound technical bases for evaluating safety issues associated with advanced reactor designs, including the need for and scope of thermal-hydraulic experiments and associated test facilities, and efforts to update the standard review plans, regulatory guidance, and regulations that are necessary for NRC to license and certify advanced reactor designs. These efforts will ensure that a predictable, rational, and credible environment exists for the regulation of future nuclear power plants. This is essential for keeping nuclear power as an option in the energy mix in the country and for the safe building and operation of future U.S. nuclear power plants in a reasonable period of time.

### **Reactor Aging and License Renewal**

**\$2,195,000**

This increase is needed to help NRC determine the capability of safety components to maintain their integrity and operability over the life of the reactor, to establish the technical acceptance criteria for evaluating renewal applications for operating reactor licenses, and to review the first lead reactor license renewal application. It is important to ensure that all relevant safety questions are resolved several years before these licenses expire.

### **Reactor Inspections, Oversight, and Regulatory Support**

**-\$5,465,000**

The NRC has decided that it can reduce its operating reactor inspection program and its operating reactor safety oversight activities as a result of (1) overall improvements in the industry's safety and performance records; (2) improvements and modifications to the inspection program which have proven effective; and (3) success in reducing the operating reactor licensing action inventory. The NRC has also concluded that it is now able to reduce emphasis on some research related to the current generation of reactors, such as thermal hydraulics and severe accident analysis due to the reduced need for large-scale experimental code validation, and seismic analysis due to the transfer of seismic networks to the United States Geological Survey.

### **High-Level Waste Management**

**\$2,030,000**

This increase is needed for NRC to continue to meet the Department of Energy's (DOE) schedule for its high-level waste repository program. The increase will primarily be used to develop a technical basis to assess potential geologic hazards to the Yucca Mountain site and initiate research on the radionuclide source term of spent fuel. The increase is also needed to evaluate DOE's surface-based testing at Yucca Mountain, including reports on site characterization and onsite reviews; to evaluate DOE's design of its exploratory studies facility; to develop and refine repository performance assessment models and codes; and to consult with DOE on its monitored retrievable storage facility program prior to submission of its license application.

Summary

---

**Planning and Personnel Management** **\$675,000**

This increase will help NRC gain a broader perspective on longer range policy issues of relevance to NRC, modernize its ADP planning to meet future information technology requirements, and support several new personnel initiatives such as pay reform, fellowship programs, and other training designed to enhance the recruitment and retention of qualified employees.

**Financial and Contract Management** **\$2,475,000**

This increase is essential to modernize and improve the NRC's financial management tools and practices, through implementation of an integrated accounting system with the Department of the Treasury, and through strengthening the agency's oversight of its appropriated and nonappropriated funds. The increase is also needed for NRC to collect 100-percent of the agency's budget through fees, as required by the Omnibus Budget Reconciliation Act of 1990, and to implement the requirements of the Chief Financial Officers Act (\$225,000). This increase will also provide needed additional contract administration consistent with Office of Federal Procurement Policy direction for improvements in this area.

**Inspector General** **\$645,000**

This increase is needed to expand the scope and complexity of audits of the agency's financial statements as required by the Chief Financial Officers Act of 1990, to conduct additional audits of NRC's technical activities, and to conduct an increasing number of inspections and investigations in a timely manner.

APPROPRIATIONS AND FINANCIAL SUMMARY

The NRC's FY 1993 budget requests new budget authority of \$550,000,000, to be funded by two appropriations -- one is NRC's Salaries and Expenses appropriation for \$545,415,000, and the other is NRC's Office of the Inspector General appropriation for \$4,585,000. Of the funds appropriated to the NRC's Salaries and Expenses, \$21,100,000, shall be derived from the Nuclear Waste Fund. The sums appropriated to the NRC's Salaries and Expenses and NRC's Office of the Inspector General shall be reduced by the amount of revenues received during FY 1993 from licensing fees, inspection services, and other services and collections, so as to result in a net FY 1993 appropriations for the NRC at an estimated \$21,100,000 -- the amount appropriated from the Nuclear Waste Fund. Revenues derived from enforcement actions will be deposited to miscellaneous receipts of the Treasury.

The NRC's proposed FY 1993 appropriations legislation and its accompanying analysis are provided on pages 7 through 15 of this section. This section also provides summaries for budget authority by function and by program, and a summary of staffing by program. The detailed justifications for direct program activities are presented on pages 23 through 166. It should be noted that the funds related to the reimbursable program are not financed by NRC's appropriated funds, but solely through reimbursable agreements with other Federal agencies and non-Federal entities.

## Summary

### PROPOSED FY 1993 APPROPRIATIONS LEGISLATION

The proposed appropriations legislation is as follows:

#### Salaries and Expenses

For necessary expenses of the Commission in carrying out the purposes of the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act of 1954, as amended, including the employment of aliens; services authorized by section 3109 of title 5, United States Code; publication and dissemination of atomic information; purchase, repair, and cleaning of uniforms; official representation expenses (not to exceed \$20,000); reimbursements to the General Services Administration for security guard services; hire of passenger motor vehicles and aircraft, \$545,415,000, to remain available until expended, of which \$21,100,000 shall be derived from the Nuclear Waste Fund: Provided, That from this appropriation, transfers of sums may be made to other agencies of the Government for the performance of the work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred: Provided further, That moneys received by the Commission for the cooperative nuclear safety research program, services rendered to foreign governments and international organizations, and the material and information access authorization programs, including criminal history checks under section 149 of the Atomic Energy Act of 1954, as amended, may be retained and used for salaries and expenses associated with those activities, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, That revenues from licensing fees, inspection services, and other services and collections shall be retained and used for necessary salaries and expenses in this account, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, That the sum herein appropriated shall be reduced by the amount of revenues received during fiscal year 1993 from licensing fees, inspection services, and other services and collections, excluding those moneys received for the cooperative nuclear safety research program, services rendered to foreign governments and international organizations, and the material and information access authorization programs, so as to result in a net fiscal year 1993 appropriation estimated at not more than \$21,100,000.

#### Office of the Inspector General

For necessary expenses of the Office of the Inspector General in carrying out the provisions of the Inspector General Act of 1978, as amended, including services authorized by section 3109 of title 5, United States Code, \$4,585,000, to remain available until expended; and in addition, an amount not to exceed 5 percent of this sum may be transferred from Salaries and Expenses, Nuclear Regulatory Commission: Provided, That notice of such transfers shall be given to the Committees on Appropriations of the House and Senate: Provided further, That from this appropriation, transfers of sums may be made to other agencies

## Summary

---

of the Government for the performance of work for which this appropriation is made, and in such cases the sums so transferred may be merged with the appropriation to which transferred. Provided further, that revenues from licensing fees, inspection services, and other services and collections shall be retained and used for necessary salaries and expenses in this account, notwithstanding the provisions of section 3302 of title 31, United States Code, and shall remain available until expended: Provided further, that the sum herein appropriated shall be reduced by the amount of revenues received during fiscal year 1993 from licensing fees, inspection services, and other services and collections, so as to result in a net fiscal year 1993 appropriation estimated at not more than \$0.

### Analysis of Proposed FY 1993 Appropriations Legislation

The analysis of the proposed appropriations legislation is as follows:

#### Salaries and Expenses

1. FOR NECESSARY EXPENSES OF THE COMMISSION IN CARRYING OUT THE PURPOSES OF THE ENERGY REORGANIZATION ACT OF 1974, AS AMENDED, AND THE ATOMIC ENERGY ACT OF 1954, AS AMENDED:

42 U.S.C. 5841 et. seq.

The Nuclear Regulatory Commission (NRC) was established by the Energy Reorganization Act of 1974, as amended, (42 U.S.C. 5801 et seq). This Act abolished the Atomic Energy Commission and by section 201 (42 U.S.C 5841), transferred to the NRC the licensing and related regulatory functions assigned to the Atomic Energy Commission by the Atomic Energy Act of 1954, as amended, (42 U.S.C. 2011 et seq). These functions included those of the Atomic Safety and Licensing Board Panel; the Advisory Committee on Reactor Safeguards; responsibilities for licensing and regulating nuclear facilities and materials; and conducting research for the purpose of confirmatory assessment related to licensing and other regulation, and other activities, including research related to nuclear material safety and regulation under the provisions of the Atomic Energy Act of 1954, as amended.

2. EMPLOYMENT OF ALIENS:

42 U.S.C. 2201(d)

42 U.S.C. 2201(d) of the Atomic Energy Act of 1954, as amended, authorizes the Commission to employ persons and fix their compensation without regard to civil service laws.

Summary

---

3. SERVICES AUTHORIZED BY 5 U.S.C. 3109:

5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.

4. PUBLICATION AND DISSEMINATION OF ATOMIC INFORMATION:

42 U.S.C. 2161(b)

42 U.S.C. 2161(b) directs that the Commission shall be guided by the principle that the dissemination of scientific and technical information related to atomic energy should be permitted and encouraged so as to provide that interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding and to enlarge the fund of technical information.

5. PURCHASE, REPAIR, AND CLEANING OF UNIFORMS:

5 U.S.C. 5901

5 U.S.C. 5901 authorizes the annual appropriation of funds to each agency of the Government as a uniform allowance.

6. OFFICIAL REPRESENTATION EXPENSES:

47 Comp. Gen. 657

43 Comp. Gen. 305

This language is required because of the established rule restricting an agency from charging appropriations with the cost of official representation unless the appropriations involved are specifically available therefor. Congress has appropriated funds for official representation expenses to the NRC and NRC's predecessor, the Atomic Energy Commission, each year since FY 1950.

7. REIMBURSEMENTS TO THE GENERAL SERVICES ADMINISTRATION FOR SECURITY GUARD SERVICES:

34 Comp Gen. 42

This language is required because, under the provisions of the Federal Property and Administrative Services Act of 1949, specific appropriation is made to the General Services Administration for carrying out the function of protecting public buildings and property and, therefore, NRC appropriations not specifically made available therefor may not be used

Summary

---

to reimburse the General Services Administration for security guard services.

8. HIRE OF PASSENGER MOTOR VEHICLES AND AIRCRAFT:

31 U.S.C. 1343

31 U.S.C. 1343 provides in effect that unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government.

9. TO REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 1301

31 U.S.C. 1301 provides in part that no regular, annual appropriation shall be construed to be permanent or available continuously unless the appropriation expressly provides that it is available after the fiscal year covered by the law in which it appears.

10. SHALL BE DERIVED FROM THE NUCLEAR WASTE FUND:

41 U.S.C. 10131(b)(4)

42 U.S.C. 10222(a)(4)

41 U.S.C. 10131(b)(4) provides for the establishment of a Nuclear Waste Fund to ensure that the costs of carrying out activities relating to the disposal of high-level radioactive waste and spent nuclear fuel will be borne by the persons responsible for generating such waste and spent fuel.

42 U.S.C. 10222(a)(4) provides that the amounts paid by generators and owners of these materials into the fund is reviewed annually to determine if any fee adjustment is needed to insure full cost recovery.

42 U.S.C. 10134

42 U.S.C. 10133

42 U.S.C. 10134 specifically requires the NRC to license a repository for the disposal of high-level radioactive waste and spent nuclear fuel and sets forth certain licensing procedures. 42 U.S.C. 10133 also assigns review responsibilities to the NRC in the steps leading to submission of the license application. Thus, the Nuclear Waste Policy Act of 1982, as amended, establishes NRC's responsibility throughout the repository siting process, culminating in the requirement for NRC licensing as a prerequisite to construction and operation of the repository.

Summary

---

42 U.S.C. 10222(d)

42 U.S.C. 10222(d) specifies that expenditures from the Nuclear Waste Fund can be used for purposes of radioactive waste disposal activities, including identification, development, licensing, construction, operation, decommissioning, and post-decommissioning maintenance and monitoring of any repository constructed under the Nuclear Waste Policy Act of 1982, and administrative cost of the radioactive waste disposal program.

11. FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED.

31 U.S.C. 1532

31 U.S.C. 1532 permits the transfer of appropriated funds from one account to another or to a working fund only when authorized by law.

12. MONEYS RECEIVED BY THE COMMISSION FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAM, SERVICES RENDERED TO FOREIGN GOVERNMENTS AND INTERNATIONAL ORGANIZATIONS, AND THE MATERIAL AND INFORMATION ACCESS AUTHORIZATION PROGRAMS, INCLUDING CRIMINAL HISTORY CHECKS UNDER SECTION 149 OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, MAY BE RETAINED AND USED FOR SALARIES AND EXPENSES ASSOCIATED WITH THOSE ACTIVITIES, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED:

31 U.S.C. 3302

2 Comp. Gen. 775

Appropriated funds may not be augmented with funds from other sources unless specifically authorized by law. Under the cooperative nuclear safety research program, funds are received from domestic entities, foreign governments, and international organizations for their participation in NRC's reactor safety research experiments. The NRC is authorized to receive directly, compensation from foreign governments and international organizations for providing safety assistance and other services related to promoting the public health and safety. Funds are also received in the form of fees from licensees for the cost of security investigations and related processing associated with access to formula quantities of special nuclear material. These funds will be used to pay the related NRC processing costs and the agency performing the security investigations. Pursuant to P.L. 99-399, section 606, funds will be received in the form of fees from licensees for the cost of fingerprint examinations and criminal history checks of each individual granted access to safeguards



Summary

---

information or unescorted access to a nuclear power plant. These funds will be used to pay for processing and performing the fingerprint examinations and criminal history checks. NRC will also use the money currently collected under 10 CFR Part 25 to pay the NRC processing costs and the Office of Personnel Management for conducting background investigations used as a basis for NRC security clearances for designated licensee representatives and other personnel requiring access to classified information.

13. REVENUES FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS SHALL BE RETAINED AND USED FOR NECESSARY SALARIES AND EXPENSES IN THIS ACCOUNT, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED.

31 U.S.C. 9701

The NRC is authorized under Title V of the Independent Offices Appropriation Act of 1952 to collect license fees. Pursuant to 31 U.S.C. 9701, any person who receives a service or thing of value from the Commission shall pay fees to cover the NRC's cost in providing such service or thing of value.

42 U.S.C. 2213

42 U.S.C. 2214

Pursuant to 42 U.S.C. 2213, the NRC shall assess and collect annual charges from persons licensed by the Commission. 42 U.S.C. 2214 (P.L. 101-508, Title VI, Subtitle B, of the Omnibus Budget Reconciliation Act of 1990) requires the Commission to assess and collect annual charges from persons licensed by the Commission that approximate 100-percent of the Commission's budget authority, less any amount appropriated to the Commission from the Nuclear Waste Fund, for each year of FY 1991-1995.

31 U.S.C. 3302

The NRC is required to deposit all revenues collected to miscellaneous receipts of the Treasury unless specifically authorized by an appropriation to retain and use such revenue.

14. THE SUM HEREIN APPROPRIATED SHALL BE REDUCED BY THE AMOUNT OF REVENUES RECEIVED FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS, EXCLUDING THOSE MONEYS RECEIVED FOR THE COOPERATIVE NUCLEAR SAFETY RESEARCH PROGRAM, SERVICES RENDERED TO FOREIGN GOVERNMENTS AND INTERNATIONAL ORGANIZATIONS, AND THE MATERIAL AND INFORMATION ACCESS AUTHORIZATION PROGRAMS.

42 U.S.C 2214

Pursuant to 42 U.S.C 2214 (P.L. 101-508, Title VI, Subtitle B, section 6101(c)(2)), the aggregate amount of the annual charge collected from all licensees shall equal an amount that approximates 100-percent of the budget authority of the Commission in the fiscal year in which such charge is collected, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), in such fiscal year.

Office of the Inspector General

15. FOR NECESSARY EXPENSES OF THE OFFICE OF THE INSPECTOR GENERAL IN CARRYING OUT THE PROVISIONS OF THE INSPECTOR GENERAL ACT OF 1978, AS AMENDED:  
  
P.L. 95-452  
  
P.L. 100-504  
  
P.L. 100-504 amended P.L. 95-452 to establish the Office of the Inspector General within the NRC effective April 17, 1989, and to require the establishment of a separate appropriation account to fund the Office of the Inspector General.
16. SERVICES AUTHORIZED BY 5 U.S.C. 3109:  
  
5 U.S.C. 3109 provides in part that the head of an agency may procure by contract the temporary or intermittent services of experts or consultants when authorized by an appropriation.
17. TO REMAIN AVAILABLE UNTIL EXPENDED:  
  
31 U.S.C. 1301  
  
31 U.S.C. 1301 provides in part that no regular, annual appropriation shall be construed to be permanent or available continuously unless the appropriation expressly provides that it is available after the fiscal year covered by the law in which it appears.
18. AN AMOUNT NOT TO EXCEED 5-PERCENT OF THIS SUM MAY BE TRANSFERRED FROM SALARIES AND EXPENSES, NUCLEAR REGULATORY COMMISSION: PROVIDED, THAT NOTICE OF SUCH TRANSFERS SHALL BE GIVEN TO THE COMMITTEES ON APPROPRIATIONS OF THE HOUSE AND SENATE.

Summary

---

31 U.S.C. 1301

31 U.S.C. 1301 prohibits the transfer of funds between appropriations without specific statutory authority. This language provides for limited transfer authority from NRC's Salaries and Expenses appropriation to its Office of the Inspector General appropriation. This will permit the NRC to augment the Office of the Inspector General appropriation on a limited basis, if it becomes necessary, without seeking additional appropriations for that fiscal year.

19. FROM THIS APPROPRIATION, TRANSFERS OF SUMS MAY BE MADE TO OTHER AGENCIES OF THE GOVERNMENT FOR THE PERFORMANCE OF WORK FOR WHICH THIS APPROPRIATION IS MADE, AND IN SUCH CASES THE SUMS SO TRANSFERRED MAY BE MERGED WITH THE APPROPRIATION TO WHICH TRANSFERRED.

31 U.S.C. 1532

31 U.S.C. 1532 permits the transfer of appropriated funds from one account to another or to a working fund only when authorized by law.

20. REVENUES FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS SHALL BE RETAINED AND USED FOR NECESSARY SALARIES AND EXPENSES IN THIS ACCOUNT, NOTWITHSTANDING THE PROVISIONS OF SECTION 3302 OF TITLE 31, UNITED STATES CODE, AND SHALL REMAIN AVAILABLE UNTIL EXPENDED.

31 U.S.C. 9701

The NRC is authorized under Title V of the Independent Offices Appropriations Act of 1952 to collect license fees. Pursuant to 31 U.S.C. 9701, any person who receives a service or thing of value from the Commission shall pay fees to cover the NRC's cost in providing such service or thing of value.

42 U.S.C. 2213

42 U.S.C. 2214

Pursuant to 42 U.S.C. 2213, the NRC shall assess and collect annual charges from persons licensed by the Commission. 42 U.S.C. 2214 (P.L. 101-508, Title VI, Subtitle B, of the Omnibus Budget Reconciliation Act of 1990) requires the Commission to assess and collect annual charges from persons licensed by the Commission that approximate 100-percent of the Commission's budget authority, less any amount appropriated to the Commission from the Nuclear Waste Fund, for each year of FY 1991-1995.

Summary

---

31 U.S.C. 3302

The NRC is required to deposit all revenues collected to miscellaneous receipts of the Treasury unless specifically authorized by an appropriation to retain and use such revenue.

21. THE SUM HEREIN APPROPRIATED SHALL BE REDUCED BY THE AMOUNT OF REVENUES RECEIVED FROM LICENSING FEES, INSPECTION SERVICES, AND OTHER SERVICES AND COLLECTIONS.

42 U.S.C. 2214

The total fees to be collected in FY 1993 are to approximate 100 percent of the Commission's budget authority. Pursuant to 42 U.S.C. 2214 (P.L. 101-508, Title VI, Subtitle B, section 6101(c)(2)), the aggregate amount of the annual charge collected from all licensees shall equal an amount that approximates 100-percent of the budget authority of the Commission in the fiscal year in which such charge is collected, less any amount appropriated to the Commission from the Nuclear Waste Fund and the amount of fees collected under the Independent Offices Appropriation Act of 1952 (31 U.S.C. 9701), in such fiscal year.

Summary

TOTAL NRC BUDGET AUTHORITY

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Request</u>	<u>Estimate Change From FY 1992</u>
Salaries and Expenses.....	\$461,314	\$508,810	\$545,415	\$36,605
Offsetting Fees Receipts.....	<u>-434,930</u>	<u>-488,848</u>	<u>-524,315</u>	<u>-35,467</u>
Net Appropriated S&E.....	\$26,384	\$19,962	\$21,100	\$1,138
 Inspector General.....	 \$3,680	 \$3,690	 \$4,585	 \$895
Offsetting Fees Receipts.....	<u>-3,680</u>	<u>-3,690</u>	<u>-4,585</u>	<u>-895</u>
Net Appropriated IG.....	\$0	\$0	\$0	\$0
 Total Net Appropriated NRC.....	<u>\$26,384</u>	<u>\$19,962</u>	<u>\$21,100</u>	<u>\$1,138</u>

Summary

SUMMARY OF BUDGET AUTHORITY BY FUNCTION

	<u>FY 1991</u>	<u>FY 1992</u>	<u>FY 1993 Estimate</u>	
	<u>Enacted</u>	<u>Estimate</u>	<u>Request</u>	<u>Change From</u>
				<u>FY 1992</u>
<u>NRC Appropriation: Salaries and Expenses</u>				
Direct Program:				
Salaries and Benefits.....	\$220,667	\$240,458	\$256,650	\$16,192
Program Support.....	146,781	166,430	177,155	10,725
Administrative Support.....	79,444	88,407	97,490	9,083
Travel.....	<u>14,422</u>	<u>13,515</u>	<u>14,120</u>	<u>605</u>
Total (S&E).....	\$461,314	\$508,810	\$545,415	\$36,605

NRC Appropriation: Office of the Inspector General

Direct Program:				
Salaries and Benefits.....	\$2,430	\$3,200	\$3,750	\$550
Program Support.....	220	390	635	245
Administrative Support.....	860	0	0	0
Travel.....	<u>170</u>	<u>100</u>	<u>200</u>	<u>100</u>
Total (IG).....	\$3,680	\$3,690	\$4,585	\$895

TOTAL NRC BUDGET AUTHORITY BY FUNCTION

Salaries and Benefits.....	\$223,097	\$243,658	\$260,400	\$16,742
Program Support.....	147,001	166,820	177,790	10,970
Administrative Support.....	80,304	88,407	97,490	9,083
Travel.....	<u>14,592</u>	<u>13,615</u>	<u>14,320</u>	<u>705</u>
Total NRC.....	<u>\$464,994</u>	<u>\$512,500</u>	<u>\$550,000</u>	<u>\$37,500</u>

Summary

SUMMARY OF BUDGET AUTHORITY BY PROGRAM

<u>Program</u>	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Reactor Safety and Safeguards Regulation . . . . .	\$136,270	\$154,755	\$163,302	\$8,547
Nuclear Safety Research . . . . .	104,213	113,888	121,378	7,490
Nuclear Material and Low-Level Waste Safety and Safeguards Regulation . . . . .	36,667	39,272	40,807	1,535
High-Level Nuclear Waste Regulation . . . . .	17,867 <sup>1</sup>	18,752 <sup>1</sup>	21,100	2,348
Special and Independent Reviews, Investigations, and Enforcement . . . . .	30,574	32,804	33,847	1,043
Nuclear Safety Management and Support . . . . .	135,723 <sup>1</sup>	149,339 <sup>1</sup>	164,981	15,642
Inspector General . . . . .	<u>3,680</u>	<u>3,690</u>	<u>4,585</u>	<u>895</u>
Total . . . . .	\$464,994	\$512,500	\$550,000	\$37,500

<sup>1</sup>Budget Authority for the High-Level Nuclear Waste Regulation Program is derived from the Nuclear Waste Fund and in FY 1991 and FY 1992 is \$19,650,000 and \$19,962,000 respectively. The difference between the funding level shown here and the budget authority (i.e., the difference of \$1,783,000 in FY 1991 and \$1,210,000 in FY 1992) is for administrative support funds. The NRC no longer allocates administrative support funds to each major agency program (e.g., High-Level Nuclear Waste Regulation). Rather, administrative support is now budgeted directly with the organization responsible for providing such support (e.g., Information Resources Management in the Nuclear Safety Management and Support Program). Thus, for comparability purposes, the budget authority shown for the Nuclear Safety Management Support Program includes \$1,783,000 in FY 1991 and \$1,210,000 in FY 1992 derived from the Nuclear Waste Fund.

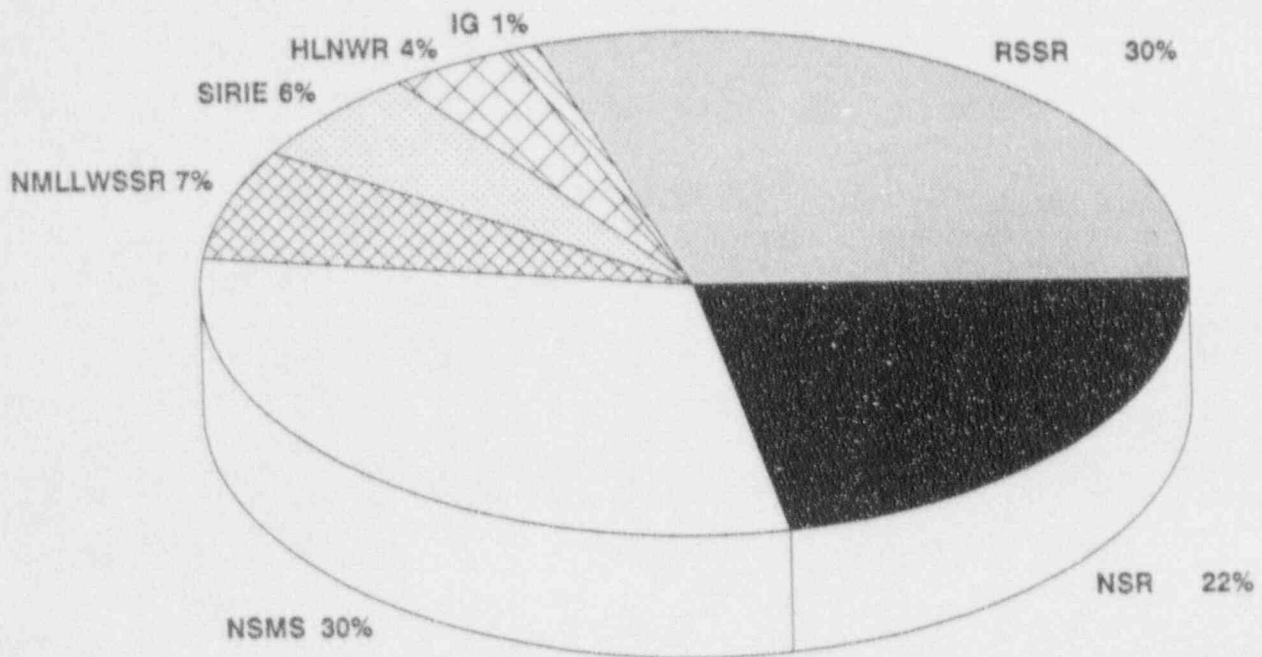
Summary

SUMMARY OF STAFFING BY PROGRAM

<u>Program</u>	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Reactor Safety and Safeguards Regulation . . . . .	1,503	1,553	1,571	18
Nuclear Safety Research . . . . .	228	237	235	-2
Nuclear Material and Low-Level Waste Safety and Safeguards Regulation . . . . .	369	389	388	-1
High-Level Nuclear Waste Regulation . . . . .	78	79	81	2
Special and Independent Reviews, Investigations, and Enforcement . . . . .	254	254	254	0
Nuclear Safety Management and Support . . . . .	776	786	807	21
Inspector General . . . . .	<u>32</u>	<u>37</u>	<u>41</u>	<u>4</u>
Total . . . . .	3,240	3,335	3,377	42



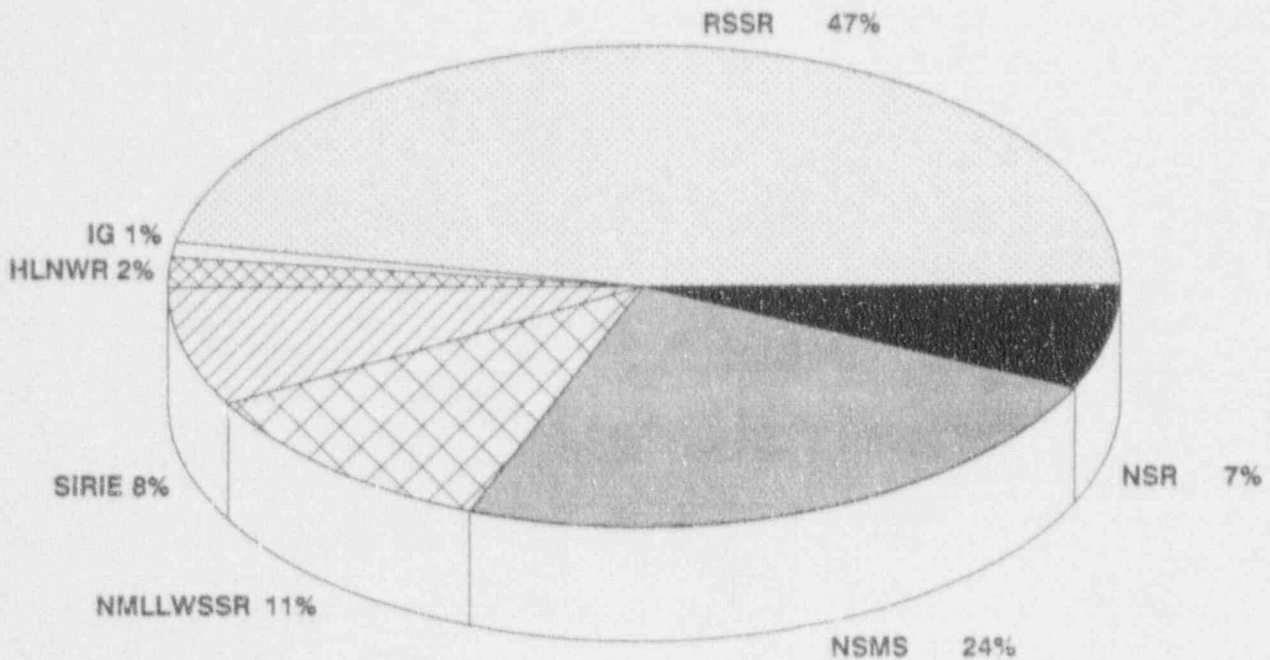
## FY 1993 DOLLAR DISTRIBUTION BY PROGRAM



### LEGEND

- RSSR -REACTOR SAFETY AND SAFEGUARDS REGULATION
- NSR -NUCLEAR SAFETY RESEARCH
- NMLLWSSR -NUCLEAR MATERIAL AND LOW-LEVEL WASTE SAFETY AND SAFEGUARDS REGULATION
- HLNWR -HIGH-LEVEL NUCLEAR WASTE REGULATION
- SIRIE -SPECIAL AND INDEPENDENT REVIEWS, INVESTIGATIONS, AND ENFORCEMENT
- NSMS -NUCLEAR SAFETY MANAGEMENT AND SUPPORT
- IG -INSPECTOR GENERAL

# FY 1993 STAFF DISTRIBUTION BY PROGRAM



## LEGEND

- RSSR -REACTOR SAFETY AND SAFEGUARDS REGULATION
- NSR -NUCLEAR SAFETY RESEARCH
- NMLLWSSR -NUCLEAR MATERIAL AND LOW-LEVEL WASTE SAFETY AND SAFEGUARDS REGULATION
- HLNWR -HIGH-LEVEL NUCLEAR WASTE REGULATION
- SIRIE -SPECIAL AND INDEPENDENT REVIEWS, INVESTIGATIONS, AND ENFORCEMENT
- NSMS -NUCLEAR SAFETY MANAGEMENT AND SUPPORT
- IG -INSPECTOR GENERAL

**REACTOR SAFETY AND  
SAFEGUARDS REGULATION**

REACTOR SAFETY AND SAFEGUARDS REGULATION

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate ..... \$163,302

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Salaries and Benefits	\$103,387	\$113,230	\$120,863	\$7,633
Program Support	24,250	33,145	33,750	605
Travel	<u>8,633</u>	<u>8,380</u>	<u>8,689</u>	<u>309</u>
Total	\$136,270	\$154,755	\$163,302	\$8,547
(Staff)	(1,503)	(1,553)	(1,571)	(18)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From FY 1992</u>
<b>Maintain Current Services</b>	
Personnel Compensation	\$6,283
Administrative Price Increases	<u>309</u>
Subtotal	\$6,592
<b>Program Requirements</b>	
Advanced Standard Reactor Designs	\$3,292
Reactor License Renewal	1,354
Reactor Inspections and Oversight	<u>-2,691</u>
Subtotal	\$1,955
<b>TOTAL</b>	<b>\$8,547</b>

**Maintain Current Services**

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System. The administrative price increases reflect increased costs of transportation and per diem.

## Reactor Safety and Safeguards Regulation

---

### Program Requirements

The resource increase for advanced standard reactor designs is needed to update the standard review plans and regulatory guidance that incorporate the technical bases for evaluating safety issues associated with advanced reactor designs and resolution of issues associated with establishing the process for advanced reactor design certification. Specific efforts include: determining the requirements for level of design detail; developing and establishing inspections, tests, analysis and acceptance criteria (ITAAC) requirements for issuing final design approval; and determining severe accident mitigation design alternatives for certified designs. Additional resources are also needed to maintain the 2-year schedule for reviewing the first lead reactor license renewal application.

These increases are partially offset by decreases in operating reactor inspections and oversight. The NRC has decided that it can reduce these programs as a result of (1) overall improvement in the industry's safety and performance record; (2) improvements and modifications to the inspection program that have proven effective; and (3) success in reducing the operating reactor licensing action inventory.

### DESCRIPTION OF PROGRAM

The Reactor Safety and Safeguards Regulation Program encompasses all NRC licensing and inspection of reactor facilities and designs, as required by the Atomic Energy Act of 1954, as amended. This includes responsibility for evaluating the public health effects, safety, environmental, safeguards, and antitrust aspects of reactor facilities and ensuring that civilian reactor facilities are designed, constructed, and operated safely and are in compliance with agency regulations. This program comprises the following four program elements: Reactor Licensing, Human Performance in Reactor Safety, Reactor Operations and Safeguards Inspections, and Operating Reactor License Maintenance and Evaluation.

These program elements, conducted by the NRC's Office of Nuclear Reactor Regulation at NRC headquarters and in the regions, ensure that: licensees operate nuclear power plants safely and are adequately prepared to respond in the event of an accident; nuclear power plants are designed and constructed properly and are ready for safe operation; licensees possess the capability to protect against sabotage and theft of nuclear materials at reactors; and, in coordination with the Office of Nuclear Regulatory Research, the agency is prepared for the future licensing of reactors through the review of standard reactor design certification and reactor license renewal applications, and the revision and update of acceptance criteria for future applications in standard review plans and regulatory guidance.

The program support funds and staff for each of the four Reactor Safety and Safeguards Regulation program elements are shown below. The program support funds are allocated for work done by Department of Energy (DOE) contractors and commercial contractors for the NRC. The narrative that follows describes these

Reactor Safety and Safeguards Regulation

program elements, gives the reasons why the resources are needed, and explains significant resource changes from FY 1992.

<u>Program Element</u>	<u>FY 1991</u>		<u>FY 1992</u>		<u>FY 1993 Estimate</u>		<u>Change From</u>	
	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>FY 1992</u>	<u>Funds Staff</u>
Reactor Licensing	\$3,794	94	\$7,428	138	\$8,571	182	\$1,143	44
Human Performance in Reactor Safety	4,503	82	7,220	86	6,920	87	-300	1
Reactor Operations and Safeguards Inspections	6,240	817	8,455	841	7,785	823	-670	-18
Operating Reactor License Maintenance and Evaluation	<u>9,713</u>	<u>510</u>	<u>10,042</u>	<u>488</u>	<u>10,474</u>	<u>479</u>	<u>432</u>	<u>-9</u>
Totals	\$24,250	1,503	\$33,145	1,553	\$33,750	1,571	\$605	18

REACTOR LICENSING

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$3,794 (94)	\$7,428 (138)	\$8,571 (182)	\$1,143 (44)

This program element is conducted to ensure that nuclear power plants are designed and constructed properly and are ready for safe operation. To achieve this objective, the NRC relies on reviews and inspections, experience from similar plants, and probabilistic risk assessments. In addition, this program is conducted to prepare for future licensing activities associated with existing sites, new sites, and reactor license renewal. This program element comprises four activities: (1) Power Reactor Applications and Inspections, (2) Standardized Reactor Design Applications, (3) Reactor License Renewal Applications, and (4) Improvements to Regulations.

RESOURCE CHANGES

The FY 1993 resource increase is needed for NRC (1) to revise and update its future application acceptance criteria in standard review plans and regulatory guidance to incorporate the technical bases for evaluating safety issues associated with advanced reactor designs and resolution of issues associated with establishing the process for the review of advanced reactor designs; and (2) to continue to review reactor license renewal applications.

1. POWER REACTOR APPLICATIONS AND INSPECTIONS

The NRC reviews applications for reactor construction permits and reactor operating licenses to evaluate their safety, environmental, and safeguards aspects, as well as their antitrust implications. Currently three operating license applications are under active review. In FY 1993, it is anticipated that one reactor operating license will be issued. There are no construction permit applications pending NRC review at present.

The NRC inspects reactors under construction to audit applicant compliance with NRC rules and regulations, and to ensure compliance with the construction permit that was issued. These inspections are conducted by NRC resident inspectors stationed at the reactor site and by NRC region-based inspectors augmented by headquarters staff. NRC resident inspectors ensure that equipment and structures are installed in accordance with design requirements and quality assurance

## Reactor Safety and Safeguards Regulation

---

procedures through reviews of procedures, direct observation, and audits of licensee quality control. Resident inspectors may also participate in agency hearings, licensing meetings, and public discussions.

The majority of NRC inspections at reactors under construction are conducted as part of the routine inspection program designed to assess applicant conformance with construction standards. Other inspection effort concentrates on evaluating the corrective measures taken by licensees to resolve previously identified problems. To augment these inspections, the NRC assesses the operational readiness of the applicant through the use of team inspections. This is an additional step to ensure that a plant is ready for and capable of safe power operation before a license is issued. The NRC will continue to inspect applicant activities to resolve employee concerns and/or allegations and other technical issues to ensure that the applicant can safely operate the plant.

### 2. STANDARDIZED REACTOR DESIGN APPLICATIONS

The standardization of nuclear power plant designs can increase the safety, reliability, and availability of nuclear power plants. Standardization will allow for a more efficient review process and a more thorough understanding of the designs by the NRC. Therefore, the Commission strongly endorses regulatory actions that will encourage industry to pursue standardization of nuclear power plant designs.

In support of the Commission's goals pertaining to future standardization of reactor designs, the agency expects to: (1) complete its phased review of the Electric Power Research Institute's (EPRI's) advanced light-water reactor requirements document for evolutionary designs in FY 1992; and (2) complete its review of EPRI's requirements document for passive designs in FY 1993. Based on the timely receipt of pertinent data and Commission policy decisions, the NRC will complete its final design approval (FDA) safety evaluation report for the General Electric (GE) Advanced Boiling Water Reactor design in FY 1993 and will continue its FDA review of the Asea Brown Boveri/Combustion Engineering (ABB/CE) System 80+ design, with the expectation that the safety evaluation report will be issued early in FY 1994. In addition, the NRC will continue its safety analysis reviews of applications expected in FY 1992 for final design approval and certification for two passive light water reactors--the Westinghouse AP600 design and the General Electric Simplified Boiling Water Reactor design. The NRC will also continue to perform preapplication reviews of the Atomic Energy of Canada Limited's Canadian Deuterium Uranium (CANDU 3) reactor, the ABB/CE's Process Inherent Ultimate Safety (PIUS) reactor, and two designs sponsored by the Department of Energy--General Atomics (GA) Modular High-Temperature Gas-Cooled Reactor (MHTGR), and the GE Advanced Liquid Metal Reactor (ALMR) in FY 1993. The NRC will continue its discussions with the Office of Management and Budget and the Department of Energy to review appropriate schedules for standardized reactor licensing.



### 3. REACTOR LICENSE RENEWAL APPLICATIONS

The NRC must be prepared to evaluate licensee applications to renew reactor operating licenses beyond their expiration dates. This preparation involves determining technical and policy issues, resolving licensing issues, and defining the criteria and process to review such renewal applications. This preliminary work is conducted jointly by the NRC's Office of Nuclear Reactor Regulation and the Office of Nuclear Regulatory Research. Based on research findings, the NRC will evaluate the safety and environmental aspects of the generic technical reports submitted by industry and each license renewal application. The NRC will establish technical acceptance criteria for evaluating requests for reactor license renewal.

The NRC has begun its review of preapplication information in support of two lead applications for reactor license renewal. The renewal application for the first lead plant is scheduled to be submitted in February 1992, with the NRC review being completed approximately 2 years after receipt of the complete application. The licensee for the second lead plant has announced that its decision to submit a license renewal application will be made late in CY 1992. The lead plant review will: (1) contribute to the development of license renewal regulatory guidance, (2) enable the NRC to gain experience that will be essential in developing the program to conduct reviews for the remainder of the currently licensed plants, and (3) serve to demonstrate the license renewal process to the industry and the public.

### 4. IMPROVEMENTS TO REGULATIONS

Timely improvements to regulations are important to implementing the NRC policies related to future licensing activities. NRC's Standard Review Plan, originally written to assist the staff in performing safety reviews of construction or operating license applications, has not undergone a substantial revision since 1981. The NRC will continue its recent initiative to revise the Standard Review Plan to reflect current regulatory documents, licensing guidance, and national codes and standards and to expand its coverage to include licensing of future reactors that reference certified standardized designs. In FY 1993, the NRC will be finalizing the standard review plans and regulatory guidance to support the safety and environmental issues associated with reactor license renewal applications. In addition, the NRC will revise generic and environmental siting guidance in order to be prepared to review an early site permit application expected to be submitted in FY 1994.

HUMAN PERFORMANCE IN REACTOR SAFETY

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$4,503 (82)	\$7,220 (86)	\$6,920 (87)	-\$300 (1)

This program element is conducted to ensure that trained and qualified operating and technical support personnel interact in an environment that ensures that their ability to prevent or cope with accidents is not compromised. The program element consists of two major activities: (1) Human Performance Evaluation and (2) Licensing and Examination of Reactor Operators.

RESOURCE CHANGES

The overall resource level in FY 1993 is nearly equal to that of FY 1992. It reflects the stability which now exists in NRC-administered requalification examinations and the efficiencies gained from the last 2 years of experience.

1. HUMAN PERFORMANCE EVALUATION

The plant personnel training and man-machine interaction efforts included in this activity are conducted to evaluate the ability of nuclear power plant personnel to meet job performance requirements; to ensure that an effective mechanism exists to assess and improve, where necessary, the quality and effectiveness of licensee training programs; and to ensure that nuclear power plant operational events involving human performance receive a detailed analysis that will enable the root cause(s) to be determined and corrections to be made.

In compliance with the April 1990 decision by the U.S. Court of Appeals for the District of Columbia, the NRC has issued for comment appropriate regulatory guidance to establish requirements for training and qualification of civilian nuclear power plant personnel. These regulations are consistent with the NRC's current policy statement on Training and Qualification of Nuclear Power Plant Personnel and will replace the current policy statement when issued in final form. In the interim, the NRC will continue to endorse the Institute of Nuclear Power Operations-managed (INPO) Training Accreditation Program. The NRC staff will monitor and evaluate the effectiveness of the INPO-managed accreditation program by participating in INPO's accreditation team visits and performing post-accreditation reviews consisting of performance-based reviews by NRC teams and

## Reactor Safety and Safeguards Regulation

assessments by lead licensing examiners and/or training and assessment specialists. The NRC senior staff also observes the discussions of the INPO team representatives and the utilities before the National Nuclear Accrediting Board and participates in meetings of the Training Manager Association. To conduct the evaluations and determine adherence to the current policy statement, the NRC will participate in INPO training accreditation team visits to approximately two sites each year through FY 1993. The NRC also plans to complete approximately eight training program inspections each year to assess program effectiveness.

The NRC staff continues to evaluate the human factors aspects of man-machine interfaces to minimize design-induced errors at nuclear power plants. As part of this effort, the NRC has developed a methodology to assess the effect of plant management on human reliability and its associated risk and to evaluate human performance as a principal contributor to operational events.

During FY 1992-1993, the NRC will continue to develop the processes to assess the root cause(s) of human error in reportable events and improve human performance by identifying the cause of the error and confirming that the licensee's process has identified and corrected the appropriate root cause.

### 2. LICENSING AND EXAMINATION OF REACTOR OPERATORS

The NRC must license all personnel authorized to operate reactors. The NRC currently administers initial and requalification examinations to evaluate an operator's understanding of the facility design and familiarity with the controls and operating procedures. These examinations consist of both written tests and tests conducted under operating conditions.

Initial examinations are administered to new operators at existing power and nonpower facilities to ensure that operating plants are staffed by qualified operators. The NRC plans to conduct approximately 900 initial examinations for power reactor operators and 90 for nonpower operators each year during FY 1992-1993.

The NRC is required to administer requalification examinations to currently licensed reactor operators prior to renewal of their 6-year licenses to verify their continued proficiency. There are currently approximately 5,300 licensed power and nonpower reactor operators. The NRC plans to conduct approximately 1,150 requalification examinations for power reactor operators and 35 for nonpower operators each year during FY 1992-1993.

Also included in this activity are efforts relating to resolving generic problems associated with operator licensing, maintaining an examination question bank,

## Reactor Safety and Safeguards Regulation

---

reviewing appeals pertaining to license denials, and improving the proficiency of examiners. During FY 1992-1993, various aspects of examination program implementation (including the newly developed examiner training syllabus, upgraded refresher training for examiners, and improved guidance for preparing and conducting examinations) will be evaluated, and improved criteria designed to maintain a high level of examiner proficiency will be developed.

REACTOR OPERATIONS AND SAFEGUARDS INSPECTIONS

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds	\$6,240	\$8,455	\$7,785	-\$670
(Staff)	(817)	(841)	(823)	(-18)

This program element is conducted to assess licensee's operation of nuclear power plants to ensure the safe operation of the facilities in accordance with NRC regulations. Its primary focus is on safe reactor operations and safeguards and includes efforts performed by NRC resident, region-based, and headquarters inspectors. The program element consists of three major activities: (1) Resident Inspections, (2) Region-Based Inspections, and (3) Specialized Inspections.

NRC's inspection program consists of three basic types of inspections: (1) mandatory routine inspections of the Core Inspection Program, (2) the follow-up inspections of the Regional Initiative and Reactive Inspection Programs, and (3) the area-of-emphasis inspections consisting of one-time inspections focusing on areas of regulatory concern and emerging safety issues. A plant considered to be a good performer requires the mandatory routine inspections and area-of-emphasis inspections, as a minimum level. Beyond the minimum, regional managers are allowed significant flexibility to focus inspections on safety problems and on plants that require special attention rather than on the completion of a more rigidly defined fixed inspection program for each site. This flexibility helps to ensure that resources are allocated effectively to enhance reactor safety.

RESOURCE CHANGES

In FY 1993, resources decrease in the operating reactor inspection program. The resource levels have been decreased as a result of (1) overall improvement in the industry's safety and performance record; and (2) improvements and modifications to the inspection program that have proven to be effective.

1. RESIDENT INSPECTIONS

Resident inspectors serve as NRC representatives in a variety of inspection functions. Their primary job is to observe, evaluate, and report on the adequacy of licensee nuclear safety activities. These inspectors concentrate on day-to-day licensee operations, followup of events, licensee management, and staff

## Reactor Safety and Safeguards Regulation

---

performance. In addition, they coordinate onsite activities of the various agency offices and participate in emergency exercises. The NRC assigns at least two resident inspectors to each operating reactor site in the nation.

### 2. REGION-BASED INSPECTIONS

Region-based and headquarters inspectors supplement the basic activities carried out by resident inspectors through a variety of program and technical inspections that afford an indepth look at licensee operations. Most of these specialized technical inspections are carried out in the areas of instrumentation, quality assurance, plant operations, systems surveillance, maintenance, modifications, inservice inspection, fire protection, training, refueling, radiation protection, environmental protection, safeguards, emergency preparedness, and management systems.

Region-based inspectors conduct reactor inspections and evaluate the corrective measures taken by the utilities to resolve identified problems. To augment the efforts of the region-based inspectors, the NRC contracts for highly specialized technical assistance that includes expertise in areas such as electrical and mechanical engineering, metallurgy, instrumentation for inspection of power reactors, aerial radiological surveys, environmental monitoring at reactor sites, and other independent, confirmatory measurements. Headquarters staff inspect nuclear facilities to supplement the regional inspections in selected technical areas and to provide a broader perspective for safety assessments of licensee performance and a mechanism for evaluating the effectiveness of regional inspections. In addition, region-based inspectors and headquarters staff respond to allegations of safety and safeguards violations at nuclear facilities and provide technical support to investigative personnel.

The NRC will conduct operations inspections, including emergency preparedness and safeguards inspections, at an estimated 111 operating reactors in FY 1992 and 112 in FY 1993. The NRC will also inspect approximately 40 nonpower reactors each year through FY 1993. The agency will continue to use fixed and mobile laboratories (e.g., the nondestructive examination van) in conducting some of these inspections.

The NRC will continue its Reactor Engineer Intern Program to provide newly hired engineers with the necessary nuclear background to discharge regional inspector duties. The interns are full-time employees undergoing a 2-year training program in different aspects of nuclear reactor and safeguards disciplines to complement their formal engineering or technical education. This program provides a continuing source of highly qualified, broadly trained individuals to assume increasingly responsible positions.

### 3. SPECIALIZED INSPECTIONS

In addition to the inspections conducted by NRC resident inspectors, region-based inspectors, and headquarters staff, the NRC conducts several types of specialized team inspections. These include, but are not limited to, safety-system functional inspections, safety-system outage modification inspections, operational safety team inspections, vendor inspections, and special inspections relating to restart of shutdown plants.

A safety-system functional inspection is an indepth engineering review of the design, configuration, maintenance, testing, and operation of reactor systems and their components and supporting systems. A safety-system outage modification inspection is also an indepth engineering examination of system functionality, but it is oriented toward the safety impact of modifications made to safety systems during plant outages. This inspection focuses on how the modification has altered the original design considerations and safety margins, the quality of the modified as-installed systems, and the adequacy of full-functional testing of the modified systems. An operational safety team inspection is an indepth review of plant operational programs, including maintenance, operations, surveillance testing, corrective action, management oversight, and safety review. These reactor inspections are conducted by a team of specialists, including operations-, design-, and installation-oriented personnel and provide NRC management with a national perspective on plant performance in cases where regional inspections have indicated the need to further examine overall safety.

The NRC will conduct two safety-system functional inspections and/or safety-system outage modification inspections each year during FY 1992-1993. These inspections are important to ensure that licensees maintain the required design safety margins as they modify and maintain reactor(s) over a period of years. Each year during FY 1992-1993, the NRC will conduct approximately two multidisciplinary operational safety team inspections to address significant safety issues that have been identified as a result of the licensee evaluation process, and eight inspections in response to (1) regional requests for assistance, (2) needs for additional area of emphasis inspections as a result of identified safety problems, and (3) implementation of generic requirements.

Vendor inspections are conducted to determine whether suppliers of materials, components, and services used in nuclear power plants are complying with applicable NRC and industry requirements. These inspections are intended to improve reactor safety by: (1) ensuring that root causes of reported vendor-related problems are being identified and that suitable corrective actions are developed and implemented; (2) informing the nuclear industry of instances involving substandard, suspected counterfeit, or fraudulently marketed vendor products; and (3) ensuring that fraudulently marketed products are traced to their source. The NRC will conduct approximately 60 vendor and/or contractor inspections each year during FY 1992-1993. Suppliers of nuclear components, materials, and services will be inspected in response to specific hardware failures, regulatory concerns, or allegations. These inspections will focus on vendor quality program implementation and will include NRC examinations of

## Reactor Safety and Safeguards Regulation

---

materials, equipment, and services provided to nuclear power plants. Some inspections also will be conducted at reactor sites, in response to concerns about equipment qualification, procurement, dedications, and licensee and/or vendor interaction. In instances of suspected counterfeiting or misrepresentation by vendors of equipment or materials furnished to nuclear power plants, the staff will aggressively support NRC's Office of Investigations and the Department of Justice reviews of vendors suspected of wrongdoing and will promptly inform licensees of the suspected misrepresentation to ensure that they take appropriate action.

To improve the inspection process, the NRC will continue to develop and implement guidance for assessing licensees' engineering support for design and modification activities, evaluating regional inspection performance, applying lessons learned from events and inspection and enforcement findings to the inspection process, and improving the application of probabilistic risk assessment methods in the inspection process.



Reactor Safety and Safeguards Regulation

OPERATING REACTOR LICENSE MAINTENANCE AND EVALUATION

	FY 1991 Enacted	FY 1992 Estimate	FY 1993 Estimate	
			Request	Change From FY 1992
Funds (Staff)	\$9,713 (510)	\$10,042 (488)	\$10,474 (479)	\$432 (-9)

This program element is conducted to ensure that operating facilities maintain adequate levels of protection of public health and safety in their daily operation, in the event of a radiological emergency, and in the event of theft of nuclear materials or sabotage. This is accomplished through the identification of inadequacies in plant design and operation, through the use of probabilistic risk assessments; evaluation of operating experience and unanticipated events; and resolution of safety issues, inspection findings, licensee proposals, and NRC-sponsored safety research. In addition, this program element is conducted to enable the NRC to evaluate both reactor and licensee performance, including accident management capabilities, and places its principal focus on operational safety. Within the scope of this program element, senior agency managers have the discretion to focus extra attention on plants that have received low Systematic Assessment of Licensee Performance (SALP) scores. This program element consists of seven major activities: (1) Project Management, (2) Licensing Activities Safety Evaluations, (3) Regulatory Improvements, (4) Reactor Performance Evaluation, (5) Evaluation of Licensee Performance and Maintenance, (6) Reactor Accident Management, and (7) Evaluation of Other-Than-Power-Reactor Applications.

RESOURCE CHANGES

The staffing has been reduced because of our success in reducing the inventory of operating reactor licensing actions that require NRC review and approval prior to licensee implementation. As a result of this success, the NRC can now direct its attention to improving management and completion of other license maintenance activities (i.e., licensing tasks) that, although important to safety, do not require prior NRC review and approval. Increased FY 1993 funding will be used to obtain contractor assistance to help complete reviews of these licensing tasks.

1. PROJECT MANAGEMENT

The NRC project managers perform the overall management activities pertaining to the regulation of nuclear power plants and serve as the focal point for maintaining contact with licensees, other NRC staff, and the public on safety matters concerning specific plants. They assign priorities to safety issues and manage the review and issuance of license amendments. Their duties include the review of the safety and environmental modifications to operating plants that are directed by the NRC as a result of safety, environmental, and safeguards assessments, as well as actions that are initiated by the licensees. Through these modifications, the NRC ensures that operating facilities achieve and maintain adequate protection of the public health and safety. The project managers also consult with State and local officials and prepare correspondence replying to public and congressional inquiries. In addition, project managers conduct certain technical reviews, evaluate overall licensee performance, and assist the regions in developing inspection plans. The NRC will continue to perform project management activities for an estimated 111 operating reactors in FY 1992 and 112 in FY 1993. The NRC will continue its Reactor Engineer Intern Program in this area as it does in the Reactor Operations and Safeguards Inspection Program to provide newly hired engineers with the necessary nuclear background to discharge project manager or technical reviewer duties.

2. LICENSING ACTIVITIES SAFETY EVALUATIONS

After an operating license is issued, routine activities, technical advances, or unexpected events at power plants can result in a need for a change to the requirements of the operating license. Detailed technical review of these "licensing actions" is necessary to ensure that the operational safety of the plant is not compromised. Routine postlicensing activities affecting reactor operations include requests for license amendments, requests for exemption from regulations, new regulations requiring backfit modifications to operating reactors, and orders for modifications of a license. Actions affecting only one plant (plant-specific) and those affecting several plants (multiplant) will be addressed and resolved.

To manage these efforts effectively, the NRC has implemented a distinction between those technical items that require review and approval by NRC prior to licensee implementation (licensing actions) and items that require either licensee certification or that do not require prior NRC review and approval (other licensing tasks).

Other licensing tasks encompass important work, often concerning actions that may result in a safety evaluation, a letter to the licensee, or NRC internal documentation concerning some technical or administrative issue for a particular plant. Approximately 1,000 operating reactor licensing actions and 500 other licensing tasks will be completed each year through FY 1993.

## Reactor Safety and Safeguards Regulation

---

Included in these activities are the conversions of existing technical specifications to standard technical specifications--an effort which is expected to improve the safety of nuclear power plants. Technical specifications, which are an integral part of a reactor's operating license, have become cumbersome over the years and, in many instances, address matters not related to safety. The NRC is currently incorporating specific improvements in existing specifications to make them more understandable to operations personnel. The NRC expects to initiate several conversions to standard technical specifications per year during FY 1992-1993.

### 3. REGULATORY IMPROVEMENTS

The NRC's Office of Nuclear Reactor Regulation will continue to provide technical input to the research staff for the resolution of generic safety issues to ensure that requirements are imposed on the appropriate licensees. The NRC will also continue to monitor the status of technical resolutions of generic safety issues to ensure that imposed requirements are implemented by licensees in a timely and effective manner.

The NRC's Severe Accident Policy Statement calls for a systematic examination of all operating reactors to identify and remedy plant-specific features that are dominant risk contributors. The Office of Nuclear Reactor Regulation will provide assistance to the Office of Nuclear Regulatory Research in reviewing individual plant examination submittals for operating reactors and will assume responsibility for in-depth reviews of operating reactor probabilistic risk assessment on individual plant examination submittals that may affect the requirements of the operating license. Although the majority of individual plant examinations will be completed by licensees by the end of FY 1992, some licensees that have multiple units will be completing new probabilistic risk assessments to support their individual plant examinations; this will delay completion of their individual plant examinations until mid-1994. Joint NRC-office review efforts will be completed within 1 year after the final submittals are received.

### 4. REACTOR PERFORMANCE EVALUATION

Experience has shown that safety issues will continue to arise as a result of events at operating reactors. This activity includes the efforts used by the NRC to respond effectively to unanticipated events as they occur and to identify actions that would help to prevent significant events. This work supports the NRC's accident prevention goal of having an effective regulatory program for achieving a low frequency of safety-system challenges, a high availability of equipment, effective operating personnel, and the timely sharing of operating experience. To accomplish this, the NRC analyzes different aspects of reactor performance and disseminates the findings to licensees via generic communications.

## Reactor Safety and Safeguards Regulation

The NRC conducts prompt, technical assessments of approximately 5,000 reactor event reports and 15 augmented inspection team reports each year to determine the immediate safety implications for a facility, the applicability to other operating reactors, and the immediate regulatory actions that must be taken. Event reports include telephone notifications of significant events at licensed reactor facilities, as well as additional event and follow-up reports submitted through the NRC's five regional offices. Each year, approximately 500 event reports require follow-up effort by the NRC to ensure that affected facilities take appropriate corrective action. In addition, approximately 200 event reports require guidance on immediate corrective actions in the form of verbal guidance and, on occasion, orders and confirmatory action letters. For certain significant events having generic concerns, the NRC issues temporary instructions to enable each region to verify appropriate licensee implementation of corrective actions.

Each year NRC's regional offices submit approximately 50 potential generic safety questions and associated reports to the NRC headquarters staff for assessment. These questions are reviewed, the reports analyzed, and the results considered for dissemination to the licensees. In addition to the reports submitted by NRC regional personnel, approximately 350 reports of defects and/or noncompliance (10 CFR Part 21) and construction deficiency (10 CFR 50.55(e)) are expected to be submitted annually by licensees and permit holders.

The NRC will also continue to support the Incident Investigation program by providing resources for approximately 15 augmented inspection teams and incident investigation teams each year during FY 1992-1993 in response to significant operating events.

Based on the results of NRC's analysis of a reactor operating event, licensee or vendor deficiency report, or a study or report issued by NRC's Office for Analysis and Evaluation of Operational Data, the NRC may determine that a potential safety problem exists and recommend or require that corrective action be taken. In a case that warrants prompt notification of licensees, vendors, and the agency staff of the existence of a potential safety-related problem, the NRC will prepare and issue a generic communication (i.e., a generic letter, information notice, or bulletin) that will recommend or require corrective action. The NRC expects to prepare and issue approximately 110 generic communications each year during FY 1992-1993.

### 5. EVALUATION OF LICENSEE PERFORMANCE AND MAINTENANCE

This activity's performance and maintenance evaluation process is intended to improve the NRC's ability to evaluate the effectiveness of licensee performance to ensure quality safe plant operations. The effort involves integrating information from the staff reviews, organizational structure and staffing, performance inspections, industry initiatives, design and procedures change processes, and effectiveness of operating plant maintenance and surveillance.

## Reactor Safety and Safeguards Regulation

The results are utilized by the NRC senior management to appraise plant performance and focus attention on those plants of greatest concern.

The Systematic Assessment of Licensee Performance (SALP) program is a major effort that involves collecting and assessing data on each site. The purposes of the SALP review process are: (1) to determine the ability of licensees to direct, guide, evaluate, and provide resources for safe plant operation; and (2) to assist NRC management in the allocation of resources used to inspect and assess licensee performance. The NRC's SALP methodology places special emphasis on licensee performance in the areas of operations, maintenance, and management through open dialogue between NRC senior management and licensees. In addition, when called upon, the Office of Nuclear Reactor Regulation supports diagnostic evaluations which supplement SALP reviews. During FY 1992-1993, the NRC will continue to conduct SALP reviews for all reactor sites on a 12-24 month schedule, depending on licensee performance. The NRC will issue approximately 60 SALP reports covering approximately 100 operating units each year.

The NRC will continue to monitor economic incentive programs created by State public utility commissions to encourage sustained improved performance as related to operating costs by utilities at nearly half of all operating power reactors in the country. The NRC's concern is that plant safety could be compromised in the interest of meeting or exceeding performance measures related to economic incentives established by State regulators. To identify potential problems, the NRC will annually survey and analyze all new incentive programs and existing programs that have undergone substantial changes to assess the potential affect on operational safety at nuclear power plants.

The NRC's quality assurance program provides another vehicle to ensure continued improvement in operational safety at nuclear power plants by determining the underlying causes of major operations-related problems and ensuring their timely detection and correction. The NRC will continue to focus its attention on commercial-grade software procurement and computer software quality assurance performed by licensees. To ensure that proper checks and balances exist in these areas, the NRC will develop and implement methodology, procedures, guidance, and training for NRC inspectors. In addition, the NRC will continue to support industry initiatives to perform critical self-assessments, which are designed to heighten licensee awareness and to enhance licensee ability to predict plant performance trends and resolve associated problems as early as possible. The NRC will use a combination of resident, region-based, headquarters, and team inspections to assess licensee performance. During FY 1992-1993, the NRC will develop and revise policy guidance in the form of revisions to section 6 of the Standard Technical Specifications for licensees and guidance documents such as the Standard Review Plan and NRC manuals for reviewers and inspectors for evaluating industry programs. The NRC will conduct 35 technical reviews of new and revised licensee quality assurance programs and topical reports each year through FY 1993. During FY 1992-1993, a study will also be performed of existing and alternative programs for improving quality with primary focus on identifying underlying causes of major operations-related problems and timely detection and correction of those problems.

## Reactor Safety and Safeguards Regulation

Through the use of data collected from inspections, performance indicators, analyses of operational data trends, and event evaluations, the NRC can compare one plant's performance with that of others and can also compare current operational characteristics with historical patterns. During FY 1992-1993, the NRC will continue to use this data to evaluate operating performance at nuclear power plants to identify plants that exhibit declining, marginal, or unacceptable operating performance and determine appropriate corrective action. If operating performance is found to be declining, then the integrated performance evaluation will include identification of the root cause(s) contributing to the decline.

With the issuance of a new maintenance rule in June 1991, the Commission reaffirmed its belief that safety can be enhanced by improving nuclear power plant maintenance across the nuclear industry and that effective maintenance must be achieved and maintained over the life of each facility. During FY 1992-1993, the NRC will continue to assess the effectiveness of industry maintenance practices and initiatives on maintenance of equipment and their impact on nuclear power plant safety.

### 6. REACTOR ACCIDENT MANAGEMENT EVALUATION

The NRC has taken an active role in reviewing the procedures that licensees maintain for coping with accident conditions (emergency operating procedures) and for implementing offsite protective measures (offsite emergency plans). Upgrades to the emergency operating procedures are intended to improve their technical content and enhance their usefulness by applying human factors principles in their development.

There is currently a need for guidance in developing more robust and comprehensive accident management capabilities to reduce the probability of a severe accident and to mitigate offsite releases if such an accident were to occur. The NRC develops and issues guidance applicable to the conduct of reactor operations during a severe accident. This includes guidance on the structure of accident management organizations, identification of specific areas that should be included in accident management procedures, and recommendations on the training and qualification of personnel. In FY 1993, the NRC will continue to develop guidance on accident management capabilities based on severe accident information, and will apply it on a pilot basis as part of an industry initiative sponsored by the Nuclear Management and Resources Council. During FY 1992-1993, the NRC will issue a generic letter on accident management that will provide guidance on the accident management framework incorporating industry-developed guidelines in establishing appropriate accident management capabilities. In FY 1993, the NRC will begin to develop guidance and criteria for evaluating licensee accident management capabilities and perform evaluations of utility capabilities, as part of emergency preparedness exercises and training program reviews.

7. OTHER-THAN-POWER-REACTOR APPLICATIONS

The NRC reviews new and renewal license applications and license amendments for nonpower reactors to evaluate their safety, environmental, and safeguards aspects. The agency plans to have approximately 5 renewal applications and approximately 25 other license amendments for nonpower reactor licenses under review each year during FY 1992-1993.

The NRC will continue to review applications for the required conversion from the use of high-enriched uranium fuel in domestic nonpower reactors to the use of low-enriched uranium fuel. Of the remaining 17 reactors affected, it is expected that approximately 12 will convert to low-enriched uranium fuel at the rate of 2 to 3 each year over the next 4 to 6 years. In addition, the NRC will continue to review and comment on proposed Department of Defense and DOE reactor projects and facilities, as requested.

**NUCLEAR SAFETY RESEARCH**



NUCLEAR SAFETY RESEARCH

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate..... \$121,378

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u> Request	<u>Change From</u> FY 1992
Salaries and Benefits	\$15,683	\$17,280	\$18,080	\$800
Program Support	87,848	95,980	102,650	6,670
Travel	<u>682</u>	<u>628</u>	<u>648</u>	<u>20</u>
Total	\$104,213	\$113,888	\$121,378	\$7,490
(Staff)	(228)	(237)	(235)	(-2)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From</u> FY 1992
<b>Maintain Current Services</b>	
Personnel compensation	\$800
Administrative Price Increases	<u>20</u>
Subtotal	\$820
<b>Program Requirements</b>	
Advanced Standard Reactor Designs	\$8,603
Reactor Aging and License Renewal	841
Reactor Regulatory Support	<u>-2,774</u>
Subtotal	\$6,670
<b>TOTAL</b>	\$7,490

**Maintain Current Services**

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System. The administrative price increases reflect increased costs of transportation and per diem.

### Program Requirements

The resource increase for advanced standard reactor designs is needed to develop sound technical bases that support safety decisions associated with design certification, especially for those advanced reactor safety features (e.g., passive safety systems, advanced instrumentation and control systems, and novel types of modular construction) that have not been previously evaluated by NRC, including the need for and scope of additional thermal-hydraulic experiments and associated test facilities. The resource increase for reactor aging and license renewal is needed to ensure that the integrity of safety components in currently licensed operating reactors is maintained during the 40-year license term and during any license renewal period.

These increases are partially offset by decreases in reactor regulatory support as a result of reduced emphasis on some research related to the current generation of reactors such as thermal hydraulics and severe accident analysis due to the reduced need for large-scale experimental code validation, and seismic analysis due to the transfer of the seismic networks to the United States Geological Survey.

### DESCRIPTION OF PROGRAM

The NRC's mission is to ensure the safe design, construction, and operation of the nuclear facilities and activities it regulates. The technologies employed are relatively new and highly complex, and it is often necessary to make regulatory judgments on matters related to safety that are well beyond normal experience-based engineering practice. The NRC requires a high-confidence level to avoid undue risk to the health and safety of the public, especially when these matters involve high-consequence accidents or disposal of radioactive waste. Thus, it is essential to develop knowledge that gives confidence in these judgments and provides the technical basis for writing safety regulations and evaluating licensee performance. Furthermore, unforeseen safety problems continue to arise from operating experience.

The nuclear safety research program encompasses all regulatory research as required by the Energy Reorganization Act of 1974 (Section 205 of Public Law 95-209). This includes the responsibility for developing recommendations for research and engaging in or contracting for research deemed necessary for performance by the Commission of its licensing and related regulatory functions. Work in this program provides independent expertise and information for making timely regulatory judgments, anticipates problems of potential safety significance for which new or expanded knowledge can assist the NRC in pursuing its mission, and develops the regulations and guides necessary to implement Commission policy or technical requirements.

In an effort to make use of all available sources of nuclear safety research information, the NRC is engaged in broad international programs to exchange nuclear safety-related information and to conduct joint research projects of mutual interest. The NRC policy of cooperating with foreign groups is designed to: (1) obtain foreign experimental and analytical research results to expand NRC's technical base, (2) encourage foreign safety research programs to make

## 1. STANDARD REACTOR DESIGNS

This activity includes: (1) research to develop information on methods and models needed to support design certification safety reviews and rulemakings for advanced reactors, and (2) efforts to establish regulations and regulatory guidance necessary to support the combined construction permit/operating license process in 10 CFR Part 52. The NRC intends to review the applicant's experimental and analytical programs, identify concerns of potential safety significance for selected safety systems, and provide independent information for making timely regulatory judgments. Working closely with the applicant, the NRC will provide regulatory feedback into the development and execution of the applicant's programs and will avoid unwarranted duplication of safety research efforts. At the same time, independent verification of the analytical and experimental information provided is necessary, especially in selected areas where the applicant is the sole source of information.

There are presently two evolutionary light-water reactor design applications under review by NRC: the General Electric (GE) Advanced Boiling Water Reactor (ABWR) and the Asea Brown Boveri/Combustion Engineering (ABB/CE) System 80+ pressurized water reactor. There are also two advanced light-water designs that employ some passive safety features and modular construction which are scheduled to submit design certification applications in FY 1992: the Westinghouse AP600 pressurized water reactor and the GE Simplified Boiling Water Reactor (SBWR). Anticipated new designs also include yet another passive, light-water reactor and three non light-water reactors that are expected to submit design certification applications: the ABB/CE Process Inherent Ultimate Safety (PIUS) pressurized water reactor, the Atomic Energy of Canada, Limited (AECL) Canadian Deuterium Uranium (CANDU) 3 reactor, and two designs sponsored by the Department of Energy--the General Atomics (GA) Modular High-Temperature Gas-cooled Reactor (MHTGR) and the GE Advanced Liquid Metal Reactor (ALMR) [formerly called the Power Reactor Innovative Small Module (PRISM)].

The NRC will assess the adequacy and reliability of new advanced reactor design concepts and quantify the margins of safety in structural, electrical, and mechanical components to support design certification and licensing decisions. New design concepts or engineering issues which will be evaluated will be reliability of modular construction; qualification of advanced instrumentation and control systems in seismic, accident and electromagnetic/radio frequency environments; new materials for reactor pressure vessels; containment structural performance under postulated severe accident conditions; and acceptance criteria for new valve designs or improved requirements for existing valve designs.

During FY 1992-1993, advanced light water reactor reliability assessments will be conducted on the suitability of an experience-based approach to seismic qualification, inservice inspection and surveillance methods, and electrical isolation device criteria. The acceptability of recent design code revisions will be assessed and the ASME fatigue design requirements will be updated. The NRC will also determine whether the research results on reactor aging are applicable to the built-in diagnostics of evolutionary and advanced light-water reactor designs.

During FY 1992-1993, unique engineering features for advanced non light-water reactors will be investigated, including the seismic design of the cross duct for the MHTGR design, use of electromagnetic pumps and performance of seismic isolators for the ALMR design.

The NRC will also evaluate systems performance of advanced light-water reactors to provide defensible, validated methods for assessing the performance and reliability of safety systems proposed for use in the AP600 pressurized water and the SBWR boiling water reactors. These reactor designs include passive core containment cooling systems and containment designs that are significantly different from systems used in the current generation of reactors. This research will include studies on the thermal hydraulic response of passive core and containment cool systems, passive safety system and control system reliability, the potential effects of severe core damage events including the behavior of damaged fuel, and subsequent pressure impacts on the containment. This research will establish the range of applicability of current methods used to assess the safety of present-generation LWRs, and, wherever unique design features warrant, will be used to develop new codes and evaluation methods. These codes and methods will be used by the staff to independently evaluate the data and analysis provided by vendors in support of their requests for design certification and will ensure that adequate margins of safety are incorporated into the advanced reactor safety system designs.

The Office of Nuclear Regulatory Research has been and will continue to provide confirmatory research support to the Office of Nuclear Reactor Regulation in the design certification safety regulatory reviews of the AP600 and SBWR designs. During FY 1992-1993, the NRC will continue to develop the needed analytical tools to assess the unique features of advanced light-water reactors that could affect plant performance during design-basis events and severe core-damage accidents. The results and insights from ongoing light-water reactor research will be used to assess the behavior of the new fuel designs under transients and accidents, and the applicability of accident phenomena modeled in existing severe accident codes to the AP600 and the SBWR designs. In FY 1992, a program was initiated to define the need for and scope of additional separate effects or integral tests, including requirements for additional NRC test facilities. The NRC will complete a systematic scaling analysis to ensure that any planned tests will cover the appropriate ranges of important parameters and that any distortions caused by small scale tests are well understood. Beginning in FY 1993, the results of the scaling analysis will be used to evaluate computer codes that are used to predict the performance of full-sized, advanced light-water reactor designs having passive safety features.

The NRC will determine whether currently available risk assessment methods are applicable to the behavior and performance of passive system designs and other features unique to advanced light water reactors during anticipated operational occurrences and postulated accidents, including severe core damage accidents. This will be done to independently assess the vendor's key assumptions used to demonstrate safety. During FY 1992-1993, the NRC will continue research on the reliability of hardware, software, and systems used in the AP600 and SBWR designs, focusing on those systems which are most different from their counterparts in current generation reactors.

## Nuclear Safety Research

Systems performance of advanced non light-water reactors warrant special research efforts because these reactor designs are radically different from current generation of light-water reactors with which NRC has regulatory experience. During FY 1992-1993, the NRC will continue an exploratory study of failure modes and effect analyses for the ALMR, MHTGR, CANDU 3, and PIUS designs. For each design, the overall analysis will cover the reactivity control, coolant inventory, heat removal, and containment function areas, as well as the instrumentation and control and auxiliary support systems. Preliminary information on these advanced reactor designs indicates that instrumentation and control systems will rely more heavily on digital designs rather than on analog designs used in current operating reactors. During FY 1992-1993, these new instrumentation and control systems will be investigated to identify any safety concerns and significant failure scenarios, and methods will be evaluated to assess the likelihood of selected common-mode failures.

During FY 1992-1993, the NRC will assess the availability of existing data and determine the need to modify fission product release and transport codes to reflect the fuel, materials, and coolant proposed for advanced reactor designs. A selected set of accident sequences will be analyzed for each advanced reactor design. During FY 1992-1993, the NRC will evaluate the need to modify reactor physics computer codes to reflect issues of reactivity control and emergency shutdown capability which are significantly different for advanced reactor designs. During FY 1992-1993, the NRC will also assess the availability of existing data and determine the need to modify thermal-hydraulic computer codes to model advanced reactor primary systems, secondary systems, and emergency core-cooling systems which represent a significant departure from the current generation of operating reactors.

During FY 1992-1993, the NRC will assess the availability and applicability of severe accident data and analytical models to advanced reactor designs. If sufficient data exists to validate any needed code modifications and the need exists to support the certification process, severe accident analyses will be conducted to provide and maintain the technical capability to review risk assessments of advanced reactor designs.

The NRC will also continue efforts that support the revision of existing regulations to facilitate the design certification of advanced reactor designs. The existing NRC safety and environmental regulations in were developed for the current class of light-water reactors and can be used to evaluate the safety of evolutionary reactors. However, these regulations and supporting regulatory guides are not universally applicable to advanced reactor designs which rely on non-conventional cooling methods, and on passive rather than active, redundant, and diverse safety systems. Advanced reactor research results will be used as the basis to revise existing regulations, wherever needed, to support safety decisions associated with design certification.

During FY 1992-1993, the NRC will continue to modify its regulations as needed to reflect severe accident and source term considerations. During FY 1992-1993, the NRC will evaluate power reactor regulatory guides to determine whether revisions are needed. During FY 1992-1993, the NRC will continue to develop regulatory guidance on the acceptable form of an inspection, test, analysis, and acceptance criteria program to ensure that a plant is built and operated in

conformance with the design certification. During FY 1992-1993, the NRC will work with national standards-setting organizations to ensure that the standards are suitable for use in the advanced reactor designs. Also during FY 1992-1993, the NRC will develop and implement a plan to achieve consistency between regulations for advanced reactors and the Commission's safety goal.

## 2. REACTOR AGING AND LICENSE RENEWAL

This activity includes efforts associated with: (1) understanding the effects of aging on key safety-related components, (2) ensuring that the effects of aging will not degrade the mechanical, electrical, and structural safety system integrity and response to accidents, and (3) developing the technical base and establishing regulations and regulatory guidance to support safety decisions associated with license renewal.

Aging affects all reactor systems, structures, and components in various degrees and has the potential to increase risk to public health and safety if its effects are not controlled. To ensure continuous safe operation of currently licensed reactors, the NRC will characterize aging effects, develop methods to detect and evaluate residual life of these components, and evaluate the effectiveness of current maintenance and repair practices to mitigate the effects and diminish the rate of degradation caused by aging. This is accomplished by conducting experiments on a wide variety of materials and expected exposure conditions. An assessment of aging related safety implications is crucial for decisions on extension of reactor operation beyond the original license period of 40 years.

The NRC will evaluate the cumulative effects of radiation on reactor pressure vessel materials that occur during the normal service of operating reactors to: (1) determine the factors that can cause the vessel to become increasingly brittle and potentially fail during normal operation and accidents, and (2) identify factors or processes that can ameliorate these consequences, such as annealing. Brittle fracture of the reactor pressure vessel, which could result in a core melt accident, must be prevented by ensuring that adequate safety margins exist in NRC regulations. The current safety margins are arbitrarily conservative because analysis methods and material characteristics used in evaluating reactor pressure vessel safety were based on engineering practice which was intended to be very conservative. To ensure that reactors can continue to operate safely during the 40-year license term and during an additional 20-year license renewal period, the NRC must reflect actual behavior of reactor pressure vessel materials exposed to radiation in its safety analyses and validate the analysis methods and material data bases to ensure that an adequate, but not unnecessarily large, margin of safety exists. Experimental and analytical research on the effects of temperature, stress, irradiation and flaws will be used to provide assurance that reactor pressure vessels will not fail by brittle fracture during service or in the event of an accident.

As new challenges to the integrity of reactor pressure vessels have been discovered, new fracture-mechanics analysis methods have been devised to fully

## Nuclear Safety Research

evaluate the situation. Over the last several years, a number of large-scale experiments have been conducted in the United States and abroad to validate these new analysis methods. During FY 1992-1993, the NRC will conduct studies to resolve discrepancies between the analysis methods and the experimental results and will identify improvements in these analysis methods. The NRC will also perform additional analyses and will plan new benchmark experiments (one or two pressurized-thermal-shock experiments or similar experiments using foreign facilities) to provide blind-test cases for the revised analysis methods.

During FY 1992-1993, the NRC will continue to obtain data on radiation embrittlement of reactor pressure vessel materials from reactor vessel and material surveillance programs. This data is used in evaluating the fracture toughness of reactor pressure vessels using a reference fracture toughness curve in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Because radiation will adversely alter material properties and embrittlement could lead to reactor pressure vessel failure in an accident such as pressurized thermal shock, the ASME reference curve will be evaluated to ensure that it accurately represents the transition temperature behavior of the materials as they embrittle. Radiation will also cause a decrease in the upper shelf energy of the material, that is, the maximum capability of the material to resist fracture while at its highest operating temperature. Federal regulations specify a minimum upper shelf energy level, as a measure to ensure safety during operations. To evaluate the adequacy of the safety margin, the NRC has obtained a quantity of typical low-upper shelf welds from the cancelled Midland reactor vessel and in FY 1992 will complete the irradiations of that material. Testing of the irradiated material will begin in FY 1992 and will be completed in FY 1993. Additional low-upper shelf welds will be procured in FY 1992 and both unirradiated testing and specimen irradiations will begin in FY 1993.

Using embrittlement data obtained from reactor vessel surveillance programs, the NRC will develop an analytical model leading to the revision of Regulatory Guide 1.99, Effects of Residual Elements on Predicted Radiation Damage of Reactor Vessel Materials. The revised guide will include the effect of phosphorus, irradiation temperature, and drop in upper shelf energy, and will serve as a basis for determining radiation embrittlement for renewal of nuclear power plant operating licenses.

If embrittlement becomes too high for continued safe reactor operation, embrittlement may be significantly reduced by a postirradiation heat treatment process called "annealing." In FY 1993, the NRC will begin a study to experimentally determine the effect of annealing on test specimen size, thickness, and constraint. A full-scale demonstration anneal is being considered in partnership with industry during FY 1992-1994. In FY 1993, the NRC will begin to assess the effectiveness of annealing thick sections on the recovery of fracture toughness loss due to neutron embrittlement and the re-embrittlement rates for these materials after annealing. During FY 1992-1993, the NRC will support the Joint Coordinating Committee on Civilian Nuclear Reactor Safety (JCCCNRS) working groups on activities, such as primary reactor system-integrity

## Nuclear Safety Research

---

studies, and acquisition and analysis of data pertaining to Soviet plant performance and component reliability. During FY 1992-1993, the NRC will conduct exchanges of materials and metallurgical specimens with the Commonwealth of Independent States (CIS) for irradiation and test.

During FY 1992-1993, the NRC will continue to develop: (1) an experimentally validated model defining environmentally assisted fatigue crack growth under realistic light-water reactor loading conditions and environments and (2) an effective cumulative damage or usage factor for environmentally assisted fatigue under realistic light-water reactor loading conditions and environments. The NRC will use the results to assess the adequacy of the ASME Code Section XI fatigue crack growth curves and the Section III fatigue design curves for plain-carbon and low-alloy steels in light-water reactor environments and will make appropriate recommendations to the ASME.

During FY 1992-1993, the NRC will begin developing data to support future revisions of the ASME Code Section III curves used to predict component fatigue life. The present curves are based on smooth-specimen, room temperature air tests. The revised codes must consider the effects of as-fabricated surfaces, notches, operating temperature, loading history, fabrication, and a water environment. Under such conditions, component fatigue life could be much shorter than expected.

The pipeworks of reactor primary systems are subject to degradation by fatigue, corrosion, and thermal aging and not by irradiation effects. The effects of these degradation mechanisms on piping integrity will be evaluated to: (1) predict the variety of cracks that could develop and the rate at which cracks grow under normal reactor operating conditions, and (2) determine if such cracks would cause failure during normal service or an accident. The information developed will be used to formulate or evaluate remedial actions needed to respond to concerns in operating nuclear power plants, such as validating recommendations for resolution of intergranular stress corrosion cracking, and to evaluate licensee requests for renewal of reactor operating licenses beyond the 40-year license term. The effect of cracks on the integrity of piping is studied through tests-to-failure of full-sized reactor piping.

During FY 1992-1993, the NRC will continue a piping component study of the effects of short-length, shallow depth cracks and different types of welds on the fracture behavior of cracked pipes. The short-length, shallow depth crack results will be used to assess the applicability of the fracture analysis methodology developed on long-length, deep cracks to the analysis of crack lengths typically considered in regulatory applications.

The first International Piping Integrity Research Group (a consortium including NRC representation) completed tests on large carbon and stainless steel pipes under dynamic and seismic conditions which assessed the margins of safety for fracture of piping subjected to realistic seismic loadings. These tests will also contribute to the final validation of the leak-before-break principle. During FY 1992-1993, the Second International Piping Integrity Research Group



## Nuclear Safety Research

will conduct additional tests on large diameter pipes and pipe components, such as elbows and tees.

During FY 1992-1993, the NRC will conduct studies on the effects of water chemistry and radiation-induced processes on the stress corrosion cracking, and the mechanical behavior of irradiated austenitic stainless steel and other materials (Alloys 600 and 182) used in high-radiation areas in the reactor. The NRC will also continue a study to update the ASME cyclic-stress fatigue design curves for nuclear power plant piping materials in light-water reactor environments.

To ensure that a component will not fail during its operational period, it is important to know when cracks are present and the rate at which the cracks will increase. This information is revealed during nondestructive examination tests of the components. The NRC will evaluate nondestructive examination procedures to validate that the current ASME and advanced nondestructive methods provide for the reliable detection, characterization, and monitoring of cracks and flaws in vessels, piping, and steam generator tubing. The NRC will also determine which of these inspection techniques are effective and the magnitude of error bands for both detection and sizing of flaws. The NRC uses results from tests on typical equipment and samples whose flaw conditions are known and materials and components removed from actual service, to measure the real condition of materials properties resulting from years of service. The test results will be used to assess the reliability of inspection methods, determine the frequency of inspections, and determine monitoring requirements for components lacking access for inservice inspections.

Testing will be conducted during FY 1992-1993 on the reliability of flaw detection in austenitic stainless steel pipe components, as part of the international Program for the Inspection of Steel Components sponsored by the Commission of the European Communities and the Organization for Economic Cooperation and Development. During FY 1992-1993, the NRC will provide recommendations for new inservice inspection criteria and programs, including sampling requirements, frequency of inspections, and inspection reliability based on material properties, service environment, and the importance of components to safety. The NRC will also pursue infield validation of the advanced synthetic-aperture focusing technique for ultrasonic testing (SAFT-UT) at power plants and in the Program for the Inspection of Steel Components.

Under certain conditions of component geometry, accessibility, material type, and degradation mechanisms, conventional inspection techniques are inadequate for proper detection and characterization of flaws. Acoustic emission is an alternative technique that has the advantage of allowing online monitoring to assess overall component integrity on a continuous basis, rather than the current periodic basis of inservice inspections. Acoustic emission monitoring at the Limerick plant, during FY 1992-1993, will continue to provide infield validation of this technology for continuous monitoring of crack initiation and growth. Acoustic emission monitoring can also be used to locate leaks to discriminate

## Nuclear Safety Research

between leak sources such as from stress corrosion cracks or valve packings, and to determine leak rates.

In FY 1992, the NRC will complete validation of the advanced-multifrequency-eddy current inspection technique for steam-generator tubing using conventional probes. In FY 1993, the NRC will begin evaluation of advanced probes fabricated in FY 1992 and advanced signal processing techniques for eddy current inservice inspection of steam-generator tubing.

The NRC is assessing the effects of aging on reactor components to: (1) identify and characterize aging and service wear that, if unmitigated, could impair plant safety; (2) identify methods of inspection, surveillance, monitoring, and evaluation of residual life useful to mitigate significant aging effects prior to loss of safety function; and (3) evaluate the effectiveness of maintenance, repair, and replacement practices to mitigate the effects and diminish the rate and extent of aging. The research results will be used to establish timely and effective maintenance, test, and replacement requirements to mitigate the effects of aging, and to establish procedures for operation of plants beyond the current license period of 40 years.

During FY 1992-1993, the NRC will continue to develop criteria and generate guidelines for inspection, maintenance, and replacement of the following components and systems: cables inside the containment, heat exchangers, high-pressure emergency core-cooling system, component cooling water system, standby liquid control system, class 1E distribution system, low-pressure residual heat removal emergency core-cooling system, service water system, auxiliary feedwater system, main steam isolation valves, turbine drives, governors, and air-operated valves. The NRC will also continue to evaluate the risk significance of age-related component failures, which can challenge the functions of the safety-related components, and will prioritize components and structures based on their aging risk significance. Other issues being evaluated during FY 1992-1993 include: (1) determining the susceptibility to fire of aged insulating materials, (2) participating in a cooperative research program on cable aging with the French Commissariat a l'Energie Atomique, (3) developing degradation models of component aging and maintenance, and (4) participating in the newly established U.S.-C.I.S. (formerly U.S.S.R.) Joint Coordinating Committee on Civilian Nuclear Reactor Safety Working Group on Nuclear Power Plant Aging and Life Extension.

Research on engineering standards is being conducted to establish and upgrade, where necessary, the performance requirements for safety-related systems, structures, and components. Research efforts are being directed to improve NRC's understanding of the bases used by the nuclear industry for constructing, inspecting, testing, and performance of nuclear power plant systems, structures, and components important to plant safety. These research results will be the basis for new and improved equipment performance requirements in appropriate codes, standards, and NRC regulatory documents.

In FY 1992, the NRC will continue to evaluate the effectiveness of current ASME construction inservice inspection and inservice testing programs and ensure the

## Nuclear Safety Research

---

adequacy of these programs to detect cracking in the reactor coolant pressure boundary piping and vessels. In particular, the NRC will determine the need to revise inservice inspection rules and will incorporate, by reference, updated edition/addenda of the ASME Boiler and Pressure Vessel Code and the ASME Operations and Maintenance Code into NRC regulations. Beginning in FY 1993, the NRC will evaluate utility responses for resolving failure of high-pressure coolant injection steam line without isolation (Generic Safety Issue 87) and utility responses to NRC recommendations in Generic Letter 89-10 for safety-related motor-operated valve testing and surveillance.

The NRC is also assessing the effects of aging on structural materials and the continued safe operation of nuclear power plants to determine: (1) the time-related change of structural materials, (2) effective inservice inspection methods to assess conditions during plant operation, (3) practical mitigation and repair techniques for extending structural life, and to develop an analytical method for quantifying current and future structural margins. In FY 1991, a report describing the Materials Properties Data Bases was issued, material samples were obtained and tested, and the evaluation of service history effects was begun. During FY 1992-1993, additional materials tests will be identified, developed, and performed and the Materials Properties Data Bases will be made available for the assessment of any age-related degradation of concrete structures.

The NRC will continue to develop license requirements for nuclear power plants to operate beyond the initial 40-year license term. In FY 1992, the NRC issued a final rule, 10 CFR Part 54, for Nuclear Power Plant License Renewal (beyond the 40-year term for presently operating nuclear power reactors). In parallel with the license renewal rule, the staff is developing a generic environmental impact statement and revision to 10 CFR Part 51, which will comprehensively address the environmental effects of license renewal. In FY 1992, the NRC will issue the final rule, 10 CFR Part 51, supported by the generic environmental impact statement.

A regulatory guide on format and content of license renewal applications and the associated standard review plan will be published as interim drafts in FY 1992 for additional public comment. In FY 1993, the regulatory guide and standard review plan, if needed, will be revised based upon the experience gained from the review of the lead plant application for license renewal.

REACTOR REGULATION SUPPORT

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds	\$51,442	\$50,034	\$47,542	-\$2,492
(Staff)	(144)	(132)	(122)	(-10)

This program element is conducted to: (1) gain an understanding of the causes of human error during reactor operations and maintenance, human user and plant system interfaces, and human performance impacts on safe operations of nuclear power reactors, (2) provide an indepth examination and understanding of abnormal operations and plant transients experienced by the nuclear industry, (3) gain an understanding of ways to prevent and mitigate the consequences of severe core damage/core melt accidents in nuclear power reactors, (4) improve NRC's ability to evaluate the effects of potential earthquakes on nuclear power reactor operations, (5) assess the adequacy of safety margins in the current methods used to ensure reactors can continue to operate safely, and (6) manage the development of revised reactor-related regulations, policy statements, and regulatory guides that incorporate research results.

This program element comprises four major activities: (1) Human Reliability, (2) Plant Performance, (3) Reactor Accident Analysis, and (4) Safety Issue Resolution and Regulation Development.

RESOURCE CHANGES

The decrease in FY 1993 resources results from: (1) reduced emphasis on some research related to the current generation of reactors such as thermal hydraulics and severe accident analysis due to the reduced need for large scale experimental code validation, (2) a reduction in effort in seismic analysis due to the transfer of the seismic networks to the United States Geological Survey, and (3) a reduction in effort in plant response to seismic and external events, due to the indefinite deferral of the implementation of research results from the completed piping and fittings dynamic reliability program.

1. HUMAN RELIABILITY

This activity includes efforts associated with: (1) understanding the causes of human error during reactor operations and maintenance and its impact on safe operations, (2) identifying factors such as training, qualification, and staffing that influence human performance in the nuclear power plant, (3) analyzing the interface between the nuclear power plant system and the human user, and (4) integrating human and hardware reliability analysis data and methods into probabilistic risk assessments. NRC efforts are directed towards reducing human errors and thereby reducing the risk to the public from the accidental release of radioactive material.

The NRC is developing enhanced methods for collecting and managing personnel performance data because lack of a standardized investigation procedure has resulted in differing findings on human performance and in the lack of detailed information on the causes of human error. During FY 1992-1993, the NRC will: (1) refine the methods for evaluating the effectiveness of performance-based training programs at nuclear power plants and (2) evaluate and upgrade, as necessary, a formal standardized method for investigating human performance-related events at nuclear power plants. To continue to improve NRC's understanding of the influences of personnel performance in nuclear power plant operations and maintenance, the NRC will evaluate personnel performance issues associated with severe accident management training and decisionmaking, and staffing issues associated with safe startup and operation of nuclear power plants.

As the nuclear power industry expands their reliance on expert systems in and safety-related and nonsafety-related tasks, the NRC needs to continue to identify and address the safety concerns associated with current and planned use of artificial intelligence, expert systems, and computers for nuclear power plant operations. During FY 1992-1993, the NRC will complete development of and pilot test an objective technical basis to provide guidance and criteria for the qualification of computer systems utilized in both safety and nonsafety applications. In FY 1993, the NRC will complete a cooperative effort with the Electric Power Research Institute to develop the technical basis for the verification and validation of expert systems. In FY 1993, the NRC will also establish a baseline of operator performance in current control rooms. During FY 1992-1993, the NRC will continue its support and direction to the Organization for Economic Cooperation and Development Halden Reactor Project effort to develop guidelines and criteria for reviewing advanced human-system interfaces, computer-based procedures in operator support systems, integrated surveillance and control rooms, and the verification and validation of computer software. During FY 1992-1993, the NRC will also continue to identify environmental factors impacting human performance at nuclear power plants and develop criteria and review guidelines for those environmental factors having a negative impact.

During FY 1992-1993, the NRC will continue to develop data gathering techniques and methods for organizational and management information, and will develop descriptive models related to operating characteristics of nuclear power plant

organizations during normal, emergency, and accident conditions and during transitions from normal to abnormal operating conditions. The NRC will initiate work to assess the safety significance of human factors during low-power and shut-down operations. Findings on organizational factors will be used to assess the feasibility, practicality, and advisability of developing performance-based regulations.

During FY 1992-1993, the NRC will: (1) develop and evaluate methods and criteria for acquiring probabilistic data on human and hardware failures, (2) revise quantification tools and develop methods to account for the effects of digital systems on human error data collection and analysis, and (3) continue to develop and field test procedures for fully integrating human performance, probabilistic data, quantification tools, and event-sequence analysis methods into the probabilistic risk assessment process. The NRC will also continue to apply human reliability assessment/probabilistic risk assessment quantitative and qualitative results in the regulatory decisionmaking process. One such application is the evaluation of risk-based indicators of safety-system and nonsafety-system trends which will be completed in FY 1993. In addition, the NRC will store and process common cause failure data in the Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR) to increase the direct interface with other data systems and codes.

## 2. PLANT PERFORMANCE

This activity includes efforts associated with providing an indepth examination and understanding of abnormal operations and plant transients experienced by the nuclear industry. Understanding these occurrences is an important element in the Commission's continuing efforts to maintain an adequate margin of safety as more plants are brought on line and as operating plants continue to age. Analysis of these operating events requires information on the processes of heat transfer and fluid flow (the thermal-hydraulic response) of the reactor coolant system over the range of plant transients and accidents that could potentially occur. Plant transients include design-basis accidents (required to be analyzed in license applications) as well as nondesign-basis events, such as multiple failures, common mode failures, and/or operator errors that have been revealed through probabilistic risk assessments and operating experience.

Plant performance research is being conducted to integrate limited experimental data and limited calculational capability into a firm technical basis. The principal products of this research are analytical tools (computer codes) used to understand and predict the plant response to deviations from normal operating conditions. The ability of the computer codes to predict plant response with an acceptable uncertainty is validated using: (1) basic experiments to derive empirical formulas for determining phenomena; (2) separate-effect experiments to evaluate the code predictions for a single, complex component; and (3) integral system experiments to evaluate the code predictions for a complete reactor. The validated computer codes will be used to evaluate design-basis accidents, the safety implications of actual events, and all hypothetical

## Nuclear Safety Research

transient scenarios determined to be major contributors to risk as a result of probabilistic risk assessment studies and actual operating events.

Long-term research plans in experimentation fall into three areas: (1) experimental facilities at universities and other laboratories, (2) fundamental testing, and (3) cooperative testing in international facilities. Additionally, cooperative testing with domestic industry, has been successful in the past and will occur in the future once legal concerns regarding potential conflicts of interest have been resolved.

During FY 1992-1993, the NRC will continue a program of experiments and analyses at universities to improve the state of the art with respect to understanding certain basic thermal-hydraulic phenomena of importance to safety, and to study reactor-design configurations that have not been experimentally evaluated. This effort will be conducted at universities in cooperation with a national laboratory to promote maintenance of expertise in the field of thermal-hydraulics.

During FY 1992-1993, the NRC will perform experiments in the area of natural circulation of reactor fluid (predominately hot gases) under conditions representative of a damaged core. In FY 1992, the NRC will begin participation in the Japanese ROSA IV program to test accident management strategies. During FY 1992-1993, the NRC will use data from simulated natural circulation tests in a Westinghouse one-seventh scale facility for possible model development and code validation.

Analytical models are the regulatory tools used to evaluate full-scale plant behavior under accident conditions. The major regulatory issue surrounding the use of such computer codes relates to the codes' applicability, scalability, and uncertainty when applied to plant analyses. To resolve this regulatory issue, experimental data most relevant to the geometry and scenario being analyzed are used to verify the computer codes and improve the modeling of thermal-hydraulic phenomena. The principal codes developed and used by the NRC and NRC contractors are TRAC-PWR and RELAP5 for the analysis of pressurized-water reactor transients, and TRAC-BWR for the analysis of boiling-water reactor transients. During FY 1992-1993, the NRC will provide limited support to a joint, international program among the code users to support code maintenance.

The Thermal-Hydraulic Research Center assists the NRC in resolving safety issues and incorporating completed research into the regulatory process. By conducting a baseline program of thermal-hydraulic research, the Center provides NRC the flexibility to respond quickly to priority safety issues arising during plant operations. In FY 1992, studies will be completed on the thermal-hydraulic aspects of loss of cooling events occurring at shutdown and low power. During FY 1992-1993, the NRC will maintain the Nuclear Plant Analyzer, an in-house graphics display system used to analyze accident management strategies, advanced reactor design capabilities, and important events in operating reactors.

## Nuclear Safety Research

---

Plant-specific simulators provide a capability to model normal plant operation and transients in an environment closely resembling the control room of the plant itself. To the extent that these simulators accurately model plant behavior, they are an outstanding system for training operators and evaluating procedures for both anticipated transients and unusual events, without putting the plant at risk. However, for severe transients, the simulators may produce an incorrect response or simply stop the transient simulation because of an inability to model the response. The best available tools for modeling these events are systems codes. For accidents up to and somewhat beyond design-basis events, the codes used are RELAP5 and TRAC. In FY 1993, the NRC will complete its independent evaluation of the capabilities of all four NRC Technical Training Center simulator upgrades. The RELAP5 and TRAC-BWR models of the simulators are constructed and several transient analyses will be performed for each simulator. These will be compared with actual simulator response to establish the improvements provided by upgrading and the areas where the simulator still reproduces the unexpected plant response.

### 3. REACTOR ACCIDENT ANALYSIS

This activity includes efforts associated with: (1) understanding ways to prevent and mitigate the consequences of severe accidents in nuclear power plants, (2) developing methods and tools to analyze the frequencies, consequences, and risks associated with severe accidents, (3) ensuring the adequacy of safety margins in the current methods of evaluating containment integrity under severe accident conditions, and (4) determining whether severe accident research results warrant revisions to NRC regulations or policies. Severe accidents have the potential to adversely affect the public health and safety from the accidental release of radioactive fission products. NRC efforts are directed towards reducing the overall risk of nuclear power plant operations by requiring design and operating strategies to prevent or ameliorate the consequences of such accidents.

The NRC has concluded, based upon probabilistic risk assessments and severe accident analyses, that the risk associated with severe core-damage accidents can be reduced through effective accident management. Accident management encompasses those actions taken during the course of an accident by the plant operating and technical staff to: (1) prevent core damage; (2) terminate the progress of core damage, if it begins, and retain the core within the reactor vessel; (3) maintain containment integrity, as long as possible; and (4) minimize offsite releases. The NRC will assess industry candidate accident management strategies, develop and assess the necessary components of utility accident management programs, and develop methods and criteria for NRC audit of industry accident management capabilities.

The ability of plant instrumentation systems to present appropriate and accurate information to the plant staff is a critical element in the successful management of severe accidents. The NRC has identified a list of candidate strategies to prevent or mitigate certain severe accident conditions with the maximum use of



## Nuclear Safety Research

---

existing plant facilities, and has assessed the general applicability of each strategy to ensure that no potential adverse effect has been overlooked. In FY 1992, several strategies considered to be particularly applicable to a wide range of plant types will be evaluated in detail because of their complexity and potential for adverse effects. These strategies include depressurization of the reactor coolant system to prevent early containment failure via the mechanism of direct containment heating, water addition to containment, and consequences of water addition to degraded cores.

The NRC will develop a reasonable body of knowledge on the major framework elements of accident management: strategies and procedures, information needs, guidance and engineering aids, organization and decisionmaking, and training, as well as processes that would assist licensees in developing a technically sound accident management program at their reactors. In late FY 1992 or early FY 1993, an NRC generic letter on accident management will be issued addressing the role of the industry products (e.g., Nuclear Management and Resources Council accident management guidelines) in the development of utility accident management capabilities. In FY 1992, the NRC will continue the assessment of accident management information needs of pressurized-water and boiling-water reactors, the availability of these instruments for a wide range of severe accidents, and the nature of plant response when they are operated beyond their qualification conditions or operating range. Beginning in FY 1993, this information base will be expanded from the two basic plant types to include modifications of these plant types.

The NRC uses probabilistic risk assessments as a systematic and comprehensive method for identifying and evaluating the effectiveness of safety improvements proposed to reduce the likelihood and consequences of accidents. The NRC will: (1) develop and assess methods for analyzing the consequences of in-plant and offsite severe accident processes; (2) develop and assess methods for quantifying the uncertainty in risk estimates and the contributions of specific issue uncertainty to the overall uncertainty; (3) develop risk-based tools capable of determining the incremental risk reduction associated with proposed plant design and operational modifications; and (4) periodically assess the frequencies, consequences, and risks of severe accidents.

In FY 1992, the NRC will publish the staff severe-accident risk analyses of the LaSalle plant, including the effect of externally initiated accidents. In FY 1993, the NRC will complete a detailed assessment of the frequencies and risks of accidents initiated while the plants are presumed to be in the most important nonfull-power operational modes. During FY 1992-1993, the NRC will continue to: (1) develop and demonstrate methods for the probabilistic risk assessment application of advanced human reliability analysis models and operational events data, and (2) review probabilistic risk assessments submitted by licensees in support of specific regulatory issues.

Because of the large uncertainties in our analyses of severe accidents, there is a need to confirm the margins of safety in the models used to evaluate safety system performance and to ensure the adequacy of current regulatory requirements

## Nuclear Safety Research

for such systems. The NRC will: (1) develop and validate core melt progression models using in-reactor and out-of-reactor experiments of in-vessel core melt progression and hydrogen generation, (2) develop and validate fuel/coolant interaction models for use in accident analysis, and (3) analyze the behavior and chemical form of fission products released from the fuel in the course of a severe accident. The research results will be used to improve NRC's ability to predict the changes in the core during a severe accident and will ensure that existing safety systems and regulatory requirements protect the public in case of a reactor accident. In the long term, the research results will reduce the uncertainties of our understanding of core melt progression and will confirm judgements made in technical areas where little or no data exist.

In-vessel core-melt progression is concerned with the state of the reactor core in a severe reactor accident from the initiation of core uncover up to reactor vessel melt-through, including the mode of reactor vessel failure. Studies to date suggest that uncertainties in the state of the core at vessel failure (the melt mass, composition, and temperature) generate the greatest uncertainties in assessing the threat to the integrity of the containment. The details of core melting are also primary determinations of in-vessel hydrogen and fission product generation. Current knowledge of in-vessel severe accident behavior has come from experiments such as the series of severe fuel damage tests and the extensive postirradiation examination performed in the Power Burst Facility test reactor, the Annular Core Research Reactor, the Canadian National Reactor Universal (NRU), and from the extensive core examination of the Three Mile Island Unit 2 reactor performed by both NRC and DOE.

In FY 1992, the final boiling-water reactor test of the core-melt process will be conducted in the Canadian NRU test reactor and the data will be used to supplement the more detailed results from out-of-reactor tests. Post-test examination, analysis, and results will be completed in FY 1994. During FY 1992-1993, one test each year will be performed in the Annular Core Research Reactor on the key late-phase melt progression phenomena of debris-bed melting, melt-relocation, crust formation, crust growth, and crust failure. During FY 1992-1993, the NRC will participate in a cooperative program to examine and evaluate specimens from the lower-head of the Three Mile Island Unit 2 reactor pressure vessel for information on early and late-phase melt progression in that accident. During FY 1992-1993, the NRC will perform a series of out-of-pile tests to better characterize the dynamic behavior of molten core materials in boiling-water reactor and pressurized-water reactor core geometries to determine if behavior of Three Mile Island Unit 2 core materials is typical of what could be expected in other likely accident scenarios.

In FY 1992, the NRC will conduct selective experiments to test the predictive capability of the models that will be used to evaluate the dynamics of molten fuel-coolant interaction in-vessel and in various containment configurations. During FY 1992-1993, the NRC will complete out-of-reactor experiments on the release of fission products from fuel (BR-3 and U.S. light-water reactor fuel) and will conduct small studies of the high-temperature chemistry of fission products. During FY 1992-1993, the NRC will determine the consequences of

## Nuclear Safety Research

reflooding degraded cores and the effectiveness of debris cooling in support of reviews and evaluations of accident management strategies, containment performance improvements, and individual plant examinations. In FY 1992, the NRC will complete the assessment of the fission product release and transport code, VICTORIA. During FY 1992-1993, the NRC will use the code to perform pre- and post-test analyses of the fission product behavior tests in the French PHEBUS test reactor. During FY 1992-1993, the NRC will perform an integrated analysis of all the results produced by the Three Mile Island Unit 2 studies to identify areas where NRC's analytical capabilities need improvement.

Because the reactor containment is important in preventing the release of radioactive materials to the environment, it is necessary to ensure that containment integrity is maintained under conditions encountered in severe core damage/core melt accidents. It is known, from previous risk studies and from the experiences at Chernobyl and Three Mile Island Unit 2, that containment survival or even delayed failure has an all-important effect on minimizing the release of radioactivity to the environment in the event of a core melt accident. An understanding of the phenomena that occur in the containment in the latter stages of the accident that could lead to containment failure is imperative if realistic assessments are to be made of the consequences of core melt accidents, which so strongly depend on whether or when containments might fail in the course of the accident. The NRC will conduct tests and experiments to assess containment performance under severe accident conditions, determine the likelihood of early containment failure in the event of severe accidents, and develop and validate integrated computer codes capable of modeling the multiple phenomena that occur in severe accidents. The research results will be used to confirm the margins of safety in current methods of evaluating containment integrity and improve NRC's ability to predict the performance of the containment under severe accident conditions.

The NRC research program on core debris interactions with concrete in the absence of water has been completed. The only NRC testing planned on core-concrete interactions is to obtain data for code validation from the existing cooperative agreement with the Electric Power Research Institute (EPRI) and with Germany. With increased emphasis on accident management and the importance of delaying or preventing containment failure, debris coolability issues take on added importance and is the NRC's new focus for understanding the effect of molten core debris on containment integrity. In FY 1992, the NRC will: (1) continue to support the EPRI Advanced Containment Experiments program to obtain data on concrete erosion and aerosol production; (2) contribute to the melt attack and coolability experiments (an extension of the Advanced Containment Experiments program) which are designed to investigate the coolability of corium-concrete mixtures using prototypic materials, and supplement large-scale experiments; and (3) study the ex-vessel limits of debris coolability in limited tests at the WETCOR facility. The WETCOR tests will complement the Melt Attack and Coolability Experiments by using significantly different boundary and initial conditions.

## Nuclear Safety Research

---

In FY 1992, the NRC will continue technology development and limited flight path tests at the SURTSEY large-scale test apparatus using high-temperature thermite materials driven by steam. During FY 1992-1993, the NRC will develop separate effects tests to quantify the entrainment and de-entrainment rates in the reactor cavity, instrument tunnel, and lower sub-compartments, as well as particle-size distributions. These are essential parameters necessary to quantify the magnitude of direct containment heating load. The data from these experiments will be used to validate severe accident codes used to quantify direct containment heating loads. The NRC will continue to provide limited U.S. support to a bilateral agreement with Japan to construct and perform high-temperature, high-speed hydrogen combustion experiments intended to explore the increased detonability of hydrogen mixtures at elevated temperatures which might exist during a severe accident. The data from these experiments will extend the existing capability for analyzing detonation phenomena in containment of low-temperature premixture, to severe accident conditions characterized by high temperature and large steam fraction.

Integrated codes are used to identify the important sources of risk in nuclear power plants and thus continue to have a key role in furthering the NRC's understanding of severe accident phenomena and their effect on nuclear power plant safety. The confidence in the analyses and judgments that will be made using these codes depends on how well they conform to the realities of severe accidents. The NRC will continue to improve and validate its integrated codes to account for important phenomena that affect reactor containment safety. In FY 1992, the NRC will begin to use direct containment heating models to assess the individual plant examination submittals. During FY 1992-1993, the NRC will continue to incorporate models for direct containment heating, natural circulation, coolability of degraded core, and lower head failure into the MELCOR code. During FY 1992-1993, the NRC will conduct a peer review of the CONTAIN and SCDAP/RELAP5 codes to determine if the codes need further development. In conjunction with the peer review, during FY 1992-1993, the NRC will review each mechanistic deterministic code to assess the magnitude of uncertainties remaining and whether an alternative approach might be appropriate for dealing with some severe accident phenomena.

The major source of risk to the public from the operation of nuclear power plants stems from accidents that lead to a containment failure. Excessive leakage of nuclear fission products can occur from the following sources: (1) failure of the containment shell (for steel containments) or the liner (for concrete containments); (2) leakage at large penetrations, as a result of the inelastic deformations and/or degradation of seals and gaskets; (3) leakage at electrical penetrations due to degradation of materials under the high temperatures associated with accident scenarios; and (4) leakage through valves due to pressure and temperature effects. These failure modes and associated load levels for containment structures cannot be predicted with any real confidence by the methods used for design, especially if the contemplated failure mode is localized leakage.

## Nuclear Safety Research

The NRC will assess the ability of the containment to withstand the loads generated in a severe accident and will analyze information on aging degradation of containments to determine the risk posed by pressure and temperature loads generated under severe accident conditions and estimate the effectiveness of proposed mitigative steps. The NRC conducts experimental and analytical research under pressure and temperature conditions at full scale including the testing of large models of actual containment structures, designs, structural elements that are part of containment structures, and penetration assemblies. The research results will be used to predict the threshold of failure, the mode of failure, and the related leak rates in order to estimate plant releases and offsite consequences.

Tests of the mode and timing of containment failure resulting from excessive temperatures or over pressurization during a severe accident have a major impact on the consequences of a severe accident. Containment model separate effects tests will be conducted in FY 1992 to permit projections of large-model test results to the large number of actual containment designs. During FY 1992-1993, the NRC will participate with the Ministry of International Trade and Industry of Japan in confirmatory tests of models of a steel boiling-water reactor containment and a prestressed concrete pressurized-water reactor containment to quantify the safety margins inherent in these containment designs. Preliminary plans indicate model scales of one-eighth to one-quarter size. These tests to failure, resulting from over pressurization, will be conducted at Sandia National Laboratories. In FY 1993, the NRC will begin research on the potential for degradation of containment capacity due to corrosive attack on either steel containments or the steel liners of concrete containments.

The NRC will apply the results of severe accident research directly to the regulatory process that adequate safety margins exist in NRC's regulations and to ensure continued safe operation of nuclear power reactors. In particular, rules or policies regarding siting, emergency planning, containment design, and closure of severe accident issues may need to be revised based on severe accident research results. The NRC will continue to implement its Integration Plan for Closure of Severe Accident Issues. This plan is intended to ensure that research efforts in each of the six major elements of the severe accident research program (individual plant examinations, containment performance improvements, improved plant operations, Severe Accident Research Program, external events, and accident management) are completed and incorporated in the regulatory process, as appropriate.

During FY 1992-1993, the NRC will: (1) receive and complete reviews of approximately 40 individual plant examination submittals, including the review of licensee evaluations of NRC's containment-performance improvement recommendations, (2) analyze the information obtained from review of the individual plant examination submittals and provide insights to the industry, and (3) begin to review the individual plant examination external event submittals provided by licensees in response to the generic letter issued in FY 1991.

#### 4. SAFETY ISSUE RESOLUTION AND REGULATION DEVELOPMENT

This activity includes efforts associated with: (1) improving NRC's ability to evaluate the effects of potential earthquakes on nuclear power plant operations; (2) resolving generic safety issues related to reactor and plant system design and plant operations; (3) developing regulations, policy statements, and regulatory guides for nuclear power plant regulation; (4) developing the technical basis for radiation protection standards to minimize the adverse consequences of exposure to ionizing radiation from licensed reactor activities; and (5) conducting the Small Business Innovation Research (SBIR) and educational grants programs.

The ability of nuclear power plants to withstand earthquakes, one of the most severe of the natural hazards, is a safety issue that could challenge the ability of all plant safety systems to function. When coupled with the likely loss of offsite power and dependent safety systems, very large earthquakes could pose a unique threat to public safety. As with many potentially severe conditions, there is much uncertainty associated with the design and evaluation of nuclear plants for earthquakes. Seismic hazard in the Central and Eastern United States remains an issue that is not likely to be easily resolved. These regions contain the highest percentage of nuclear power plants in the United States. The geology of these central and eastern regions makes it difficult to establish earthquake magnitudes or seismic parameters for specific locations, or to ensure a proper design basis for individual power plants. Our understanding of the response of nuclear plants to earthquakes greater than those considered in seismic design safety reviews (operating basis earthquake and safe shutdown earthquake) has been greatly increased by the testing-to-failure of equipment and structures, by the gathering and synthesis of earthquake experience data from non-nuclear facilities, and by the large number of seismic probabilistic risk assessments and seismic margins studies that have been done. Because of the potential impacts on public health and safety resulting from an earthquake, the NRC will continue efforts to: (1) improve estimates of earthquake hazards by identifying potential earthquake sources and determining the distribution of seismic energy; (2) estimate the possible range and likelihood of seismic ground motions at nuclear plant sites; and (3) assess the effect of these ground motions on soil, and on plant structures, equipment, and systems.

Results from the Seismic Category I Structures Program, the Seismic Component Fragility and Ruggedness Program, and other previously completed programs are indicating that the earthquake resistance of structures, equipment, and piping is, in general, higher than previously thought. Research and standards development during FY 1992-1993 will be directed at integrating these results into the rules and regulations, and revising the existing seismic probabilistic risk assessments and seismic margins methodologies to incorporate lessons learned from plant seismic reviews and any new and significantly different information about seismic hazards, component capacities, and system behavior. However, the results of a joint EPRI/NRC research program on seismic capacity of piping systems will be left for the ASME code committees to implement.

## Nuclear Safety Research

As a part of the overall effort to delineate seismic hazard and risks, the NRC has been funding the operation of seismographic networks in the Central and Eastern United States. By the end of FY 1992, the U.S. Geological Survey (USGS) will have completed its agreement with NRC and will have taken over these networks. Beginning in FY 1993, the NRC will sponsor research to use and independently evaluate data gathered from the National Seismographic Network. The NRC will continue to support USGS and other research activities on geological and seismological issues of regulatory significance during FY 1992-1993. During FY 1992-1993, paleoseismic techniques similar to those used in the study of the 1886 Charleston earthquake will be used to assess the possibility of large prehistoric earthquakes. Results of this effort will reduce the uncertainty in earthquake zone identification and earthquake frequency predictions. In FY 1992, the NRC will begin a cooperative effort with the EPRI and DOE to develop a hazard assessment method to characterize the seismic hazard east of the Rocky Mountains.

In FY 1993, the NRC will publish a final rule and associated regulatory guides on Seismic and Geologic Siting Criteria for Nuclear Power Plants (Appendix A of 10 CFR Part 100). As a part of this effort, a new appendix, Appendix S to 10 CFR Part 50, dealing with seismic design requirements, will also be published.

A number of efforts will be continuing to determine attenuation characteristics of ground motion through shallow soils over bedrock by obtaining field data from seismographs at a facility in Anza, California, and by using regression analysis of ground motion data sets from eastern and western United States earthquakes. Among others, efforts in FY 1993 will include development of the ability to analyze data from the satellite-based Global Positioning System to determine crustal motions, and a study of high-frequency ground motions in the Eastern United States to develop intensity-seismic moment correlations for estimating seismic moments of large eastern earthquakes.

Additionally, NRC research is being conducted to determine the risk significance of the failure level of concrete structures and critical components (such as electrical equipment) to supplement the existing data base that is being gathered in cooperation with the Electric Power Research Institute. During FY 1992-1993, the NRC will initiate a systematic reevaluation of past seismic probabilistic risk assessments in light of new data and insights that have been gained and will reassess the adequacy of seismic margins review procedures in light of the findings. During FY 1992-1993, the NRC will develop specific guidelines for external event (seismic and wind) probabilistic risk assessments for operating light-water reactor designs which will also be applicable to advanced reactor designs.

New procedures for estimating the capability of nuclear power plants to withstand earthquakes larger than their original design bases are being developed on the basis of recent research results. Before the procedures can be used with a high degree of confidence, they must be further validated by data bases that reflect new experience and experiments. In a joint venture with the Electric Power Research Institute and the Taiwan Power Company, a cylindrical concrete model structure is scheduled to be built in a seismically active area of Taiwan. The

## Nuclear Safety Research

surrounding soil will be instrumented and data recording and analytical effort will begin in FY 1992. During FY 1992-1993, the NRC will: (1) review and participate in the ASME's revision of the pipe damping criteria in their boiler- and pressure-vessel code, and (2) revise a regulatory guide to incorporate new pipe damping and structural damping criteria that has been modified to improve the prediction of major plant structure response to seismic events.

Centrally managing the resolution of safety issues that span the technical and organizational responsibilities of NRC offices ensures that a viable and up-to-date generic issues program is maintained. A generic safety issue is one that involves a safety concern that may affect the design, construction, or operation of all, several, or a class of reactors and may have a potential for safety improvements and issuance of new or revised requirements or guidance. During FY 1992-1993, the identified generic safety issues will continue to be prioritized and an annual report and/or briefing will be provided to the Commission on the status of the resolution of generic issues. The agency's Safety Issue Management System will be updated monthly, the Generic Issue Management Control System will be updated quarterly, and supplements to NUREG-0933, Prioritization of Generic Safety Issues, will be updated semiannually.

Most of the current backlog of approximately 21 generic safety issues (those prioritized prior to FY 1987) are expected to be resolved by the end of FY 1993. However, efforts will continue during FY 1992-1993 and beyond to resolve the few remaining current issues and new issues (prioritized since FY 1987). In FY 1992, 13 generic safety issues are scheduled for resolution and, in FY 1993, 6 generic safety issues are scheduled for resolution. Thirty-one issues are scheduled to be prioritized in FY 1992 and four in FY 1993.

During FY 1992-1993, the implications of the accident at Chernobyl for the safety regulation of commercial power plants will continue to be assessed as detailed in the Chernobyl Follow-Up Research Plan.

Rule and regulatory guidance development efforts for nuclear power plants are also managed centrally to ensure that: (1) rules are developed in a timely manner, (2) regulatory impact analyses are developed in support of reactor-related rulemaking and other generic requirements, (3) generic methodology and guidance is used in developing regulations, and (4) results of NRC and other research are incorporated in revised reactor regulations, policy statements, and guides.

During FY 1992-1993, the NRC will issue proposed and final rules for Training and Qualification of Nuclear Power Plant Personnel, and Clarification of Physical Protection Requirements at Fixed Sites. During FY 1992-1993, the NRC will consider the need to initiate rulemakings for: (1) Night Firing Qualifications for Security Guards at Nuclear Power Plants, (2) Searching Security Personnel, (3) Reduction of Reporting Frequency for Effluents From Nuclear Power Plants From Semiannual to Annual, and (4) Regulation of Independent Power Producers.



## Nuclear Safety Research

---

During FY 1992-1993, the NRC will provide reactor-related input for the Regulatory Agenda on a quarterly basis, provide reactor-related input for the report on the status and control of rulemaking efforts to the Executive Director for Operations on a semiannual basis, and participate in the development of approximately 5 regulatory impact analyses each year to support reactor-related rulemaking and other generic requirements, as required by the backfit rule.

During FY 1992-1993, the NRC will initiate changes in existing reactor regulations and regulatory requirements that can be eliminated or modified without compromising safety. This ongoing effort may be particularly fruitful in narrowing requirements to those of greatest safety significance and applicability to NRC's licensing reform initiatives.

The regulatory application of new source term efforts incorporates new information resulting from severe accident research into the safety regulations of nuclear power plants. In FY 1992, the NRC will issue a proposed revision of the reactor site criteria, 10 CFR Part 100, to remove source term and dose calculations and to add site criteria. References to source term and dose calculations, for plant design purposes, will be incorporated into an interim revision of 10 CFR Part 50, also to be issued in FY 1992. In FY 1993, the NRC will issue the final rule on 10 CFR Part 100, the final Appendix A to 10 CFR Part 100, and the proposed rule on 10 CFR Part 50. In FY 1992, the NRC will develop a proposed definition of a large release for use in safety goal implementation. In FY 1993, the staff will respond to and implement Commission comments on the proposed definition.

Reactor radiation protection and health effects research is being conducted to ensure that workers and the general public are adequately protected from adverse consequences of exposure to ionizing radiation from licensed reactor activities. Efforts include developing reactor radiation protection standards; developing guidelines for implementing the standards; and planning, developing, and directing safety research studies to evaluate the relationship between human exposure to ionizing radiation and radioactive material, and the probability of increased incidence of cancer and genetic effects. A principal activity is the implementation of the revised standards for protection against radiation (10 CFR Part 20). The research results and the recommendations of such organizations as the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements, Presidential guidance to Federal agencies, consensus standards, licensee performance indicators, and cost and feasibility data will provide the technical basis for reactor licensing decisions, inspection activities, and the standard development process.

During FY 1992-1993, the NRC will continue to develop and implement testing and accreditation criteria for extremity dosimetry. During FY 1992-1993, the NRC will begin developing performance criteria, standards, and guidance on in vivo and in vitro bioassay assessment. During FY 1992-1993, the NRC will complete the development of performance criteria and guidance for air sampling for internal dose control and will establish criteria for performing the alpha self-absorption correction in air-sampling filters. During FY 1992-1993, the NRC

## Nuclear Safety Research

---

will continue surveillance of industry and DOE research and development on dose reduction at nuclear power plants focusing on high-dose worker groups. During FY 1992-1993, the NRC will continue performing a feasibility study and cost-benefit analysis of worker self-monitoring for dose reduction. In FY 1992, the NRC will continue the investigation of the potential buildup of radioactive materials due to recirculatory reactor coolant/effluent. The analysis will be completed in FY 1993 and will be used to revise effluent release limits, if necessary. During FY 1992-1993, the NRC will complete the evaluation of the impact on storage casks of the heat generated by spent fuel, and will investigate low-temperature oxidation of spent fuel in order to evaluate the acceptability of spent fuel storage in air. Regulatory Guide 3.54, Spent Fuel Heat Generation in an Independent Spent Fuel Storage Installation, will be revised in FY 1993. During FY 1992-1993, the NRC will initiate a research program to independently assess the effects of hydrogen-water chemistry on radiation buildup.

During FY 1992-1993, the NRC will examine the differences in radiation protection requirements that might result from renewal of existing reactor facility licenses. During FY 1992-1993, the NRC will consider the need to initiate programs to: (1) verify health physics measurements, (2) develop computer codes for in vivo bioassay calibrations, (3) define criteria to specify accurate breathing zones used in air sampling, (4) evaluate the efficiency of new chelating agents to remove internally deposited radionuclides, and (5) develop improved methods for measuring beta radiation in the presence of gamma radiation.

During FY 1992-1993, research will continue on placental transfer and other parameters affecting dose to embryo/fetus for selected radionuclides. The results of these studies will permit calculation of embryo/fetus dose from maternal intake to implement dose limits for pregnant workers. During FY 1992-1993, a regulatory position will be developed for calculating fetal doses from intake of the most critical radionuclides and NRC will consider the need to expand the research to include other radionuclides. During FY 1992-1993, the NRC will continue a research program on the molecular and cellular effects of radiation which can reduce the uncertainty in health risk estimates. During FY 1992-1993, the NRC will continue to support the review and analysis of health effects information and will provide research and operational support funds for the working groups of the International Commission on Radiological Protection, the National Council on Radiation Protection and Measurements, the Committee on Interagency Radiation Research and Policy Coordination, and the National Academy of Sciences.

During FY 1992-1993, the NRC will complete the development of health effects models for reactor accidents for "high" linear energy transfer radiation. During FY 1992-1993, the NRC will continue a review of the adequacy of present neutron dose limits. During FY 1992-1993, the NRC will continue an effort to establish a scientific consensus position on acceptable levels of radiogenetic risk. This effort will focus on all of the contributors to radiogenetic risk, including mortality, morbidity, genetic effects, and teratogenic effects to develop a more comprehensive index of harm. During FY 1992-1993, the NRC will perform selected

## Nuclear Safety Research

studies on the metabolism of radionuclide chemical forms to obtain data that can be used to improve internal dosimetry models.

During FY 1992-1993, the NRC will continue to monitor licensee performance by using the Radiation Exposure Information Reporting System. Processing of termination reports will continue and statistical summaries of worker doses will be issued annually. The NRC will also continue to work with the National Cancer Institute and other organizations to develop and implement a national worker dose data base to support health effects studies. The development and revision of regulatory guides supporting the comprehensive revision of 10 CFR Part 20 will continue into FY 1993. The guides will be completed on a schedule consistent with the effective implementation date of the final Part 20 rule. During FY 1992-1993, the NRC will continue identification of the biological effects and performance criteria for controlling "Beta Hot Particle Contamination of the Skin" and will consider the need to initiate rulemaking to establish requirements for Skin Dose Limit for Hot Particles.

During FY 1992-1993, the NRC will initiate rulemaking and issue a proposed or final rule for revision of respiratory protection requirements and guidance in 10 CFR Part 20. During FY 1992-1993, the NRC will assess the need and will develop rulemaking for: (1) Extremity Dosimetry Accreditation, (2) Part 20 dose limits for patients and members of the public, and (3) Criteria for Extraordinary Nuclear Occurrence.

The NRC will continue to support research education grants and small business innovation research initiatives. Pursuant to sections 31(a) and 141(b) of the Atomic Energy Act of 1954, as amended, the NRC is authorized to award grants and cooperative agreements to educational institutions, nonprofit institutions, State and local governments, and professional societies. The NRC grant program is administered in accordance with the Federal Grant and Cooperative Act of 1977, OMB guidance, and NRC policies and procedures. The purposes of this program are to increase public understanding of nuclear safety, enlarge the body of knowledge and technical information, and enhance the protection of the public health and safety. Such support to educational institutions is limited to no more than one percent of the total annual budget for the Office of Nuclear Regulatory Research, NRC. The current NRC grant program supports a variety of professional meetings and university-based research projects.

The Small Business Innovation Research Program (SBIR) is required by Public Law 97-219 to stimulate technological innovation by small businesses. The law requires that Federal agencies establish SBIR programs if their extramural research budget exceeds \$100 million. The NRC has participated in the program since it was established in 1982, notwithstanding the fact that the research budget has been less than \$100 million. The NRC's SBIR program supports high-quality and cutting-edge research of interest to the NRC. The program also seeks to couple this research with follow-on, private funding to pursue commercial applications and to increase technological innovation. About 110 to 130 SBIR proposals are reviewed each year and about 10 to 12 contracts are awarded.

NUCLEAR MATERIALS LICENSING AND REGULATION SUPPORT

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	FY 1993 Estimate	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$ 8,081 (46)	\$ 9,472 (49)	\$ 9,715 (50)	\$ 243 (1)

This program element is conducted to: (1) establish criteria for use by NRC and Agreement State licensing staff in review of applications for low-level waste disposal facilities, (2) evaluate the overall performance of low-level waste disposal systems and the safety and performance of engineered enhancements and alternatives to shallow land burial, and (3) manage the development of revised regulations, policy statements, and regulatory guides that incorporate research results related to the licensing of fuel cycle facilities; the safeguarding of facilities and special nuclear materials; the transportation of radioactive materials; the medical, academic and industrial use of radioactive materials; and low-level waste disposal.

This program element comprises two major activities: (1) Nuclear Materials, and (2) Low-Level Waste Disposal.

1. NUCLEAR MATERIALS

This activity includes efforts associated with developing regulations, policy statements, and regulatory guides needed for the licensing of fuel cycle facilities, the safeguarding of facilities and special nuclear materials, the transportation of radioactive materials, and medical, academic, and industrial use of radioactive materials; and developing the technical basis for radiation protection standards for minimizing the adverse consequences of exposure to ionizing radiation from licensed nuclear materials activities. Fuel cycle regulatory products ensure the safety of workers and the public from licensed activities at uranium hexafluoride production, uranium enrichment, and reactor fuel fabrication facilities. Safeguards regulatory products ensure the physical security and accountability of strategic special nuclear material, and the physical protection of licensed facilities. Transportation regulatory products ensure that certified package designs protect workers and the public during shipment of materials. Medical, academic, and industrial regulatory products ensure the safety of medical diagnosis and therapy, medical and biological research, academic training and research, industrial gauging and nondestructive testing, radiopharmaceutical production and fabrication of consumer products such as smoke detectors.

## Nuclear Safety Research

---

Materials rule and regulatory guidance development efforts are managed centrally to ensure: (1) rules are developed in a timely manner, (2) regulatory impact analyses are developed in support of materials-related rulemaking and other generic requirements, and (3) results of NRC and other research are incorporated in materials regulations, policy statements, and guides.

During FY 1992-1993, the NRC will issue proposed and/or final rules for: (1) Transport Regulations: Compatibility with the International Atomic Energy Agency; (2) Use of Radiopharmaceuticals for Medical Research, Biologics Containing Byproduct Materials, and Compounding Radiopharmaceuticals; (3) Day Firing Qualifications and Physical Fitness Programs for Security Personnel at Category I Fuel Cycle Facilities; (4) Restrict Maximum Air Gap Between Device and the Product for General Licensed Devices; (5) Fitness-for-Duty Program for Category I Facilities and Shipments; (6) Removal of Generic Exemptions from Licenses; (7) Scheduling of Final Safety Analysis Report Updates; (8) Recordkeeping and Tracking Requirements for Possession of Industrial Devices; and (9) Reporting Defects and Noncompliance for Nonreactor Facilities. In FY 1993, if appropriate, the NRC will initiate a proposed rule on requirements for assessing the pregnancy/nursing status of patients covered under 10 CFR Part 35. During FY 1992-1993, the NRC will continue development of proposed rulemakings for Table S-3 and S-4 in 10 CFR Part 51, and Adding Iridium-192 Wire for Interstitial Treatment of Cancer. During FY 1992-1993, the NRC will consider the need to initiate rulemakings for: (1) Training for Medical Licensees, (2) Repository Operations Criteria, (3) Changes to Report of Proposed Activities in Non-Agreement States, (4) Licensee Announcement of Inspections at Fuel Cycle Facilities, (5) Origin Swap of Nuclear Materials, and (6) Procedures For Receiving and Opening Packages.

During FY 1992-1993, the NRC will provide materials-related input for the Regulatory Agenda on a quarterly basis, provide materials-related input for the report on the status and control of rulemaking efforts to the Executive Director for Operations on a semiannual basis, and participate in the development of approximately 10 regulatory impact analyses each year to support materials-related rulemaking and other generic requirements, as required by the backfit rule

During FY 1992-1993, the NRC will initiate changes in existing nuclear materials regulations and regulatory requirements that can be eliminated or modified without compromising safety. This ongoing effort may be particularly fruitful in narrowing requirements to those of greatest safety significance and applicability to NRC's licensing reform initiatives.

Materials radiation protection and health effects research is being conducted to ensure that workers and the general public are adequately protected from adverse consequences of exposure to ionizing radiation from licensed materials activities. Efforts include developing nuclear materials radiation protection standards; and developing guidelines for implementing the standards. The research results and the recommendations of such organizations as the International Commission on Radiological Protection and the National Council on

## Nuclear Safety Research

---

Radiation Protection and Measurements, Presidential guidance to Federal agencies, consensus standards, licensee performance indicators, and cost and feasibility data will provide the technical basis for materials licensing decisions, inspection activities, and the standards development process.

During FY 1992-1993, the NRC will continue to examine the emerging technologies for uranium enrichment as they are developed by the DOE and will investigate potential radiological and chemical safety concerns. During FY 1992-1993, the NRC will continue to support work relating to criticality and radiological and industrial safety for fuel cycle activities (e.g., revision of a DOE criticality manual for users and validation and verification of heat transfer codes for evaluating dry spent fuel storage).

During FY 1992-1993, the NRC will initiate rulemaking and issue a proposed or final rule for: (1) Definition of Fixed Radiology Facility to clarify 10 CFR Part 34; and (2) Use of Sealed Sources in Well Logging Activities, previously certified under ANSI, and revise the associated standards.

### 2. LOW-LEVEL WASTE DISPOSAL

This activity includes efforts associated with confirming NRC's understanding of the processes and phenomena that may affect the safety of low-level waste disposal and ensuring that the regulatory framework is adequate for the long-term protection of the public health and safety and the environment. Low-level waste disposal issues include waste form stability and waste package integrity, radionuclide transport through the disposal facility environment, and evaluation of long-term doses resulting from radionuclide releases beyond the disposal facility environment. Efforts are necessary to support the discharge of NRC's responsibilities for the disposal of low-level radioactive waste and uranium mill tailings under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, the Low-Level Radioactive Waste Policy Act (LLRWPA) of 1980, and the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985.

Low-level waste disposal research is being conducted to: (1) provide the technical base for review of license applications for low-level waste disposal facilities; (2) support development of regulatory criteria for use in the licensing process; (3) provide the technical base for review of topical reports on waste form stability; and (4) assess licensee compliance with regulatory requirements, particularly those on radiation dose limits. Performing the needed research in a timely manner is made more urgent and complex by two factors. First, the LLRWPA sets a very tight time schedule for establishing new low-level waste disposal facilities within individual States or State compacts. Second, the States and State compacts have chosen to consider alternative disposal methods to conventional shallow-land burial. Certain of these alternatives must be critically examined by well-focused research to determine their acceptability and to give guidance to the States and State compacts. NRC's low-level waste research has to be more prescriptive and developmental than the

high-level waste program because many States are licensors of low-level waste disposal and will be looking to the NRC for technical support in their low-level waste licensing and regulatory programs. The LLRWPA requires that each State provide for the disposal of its own low-level waste. This is expected to result in approximately 12 new, low-level waste disposal facilities as States form compacts to dispose of waste.

The direction of the low-level waste program has changed from an earlier focus on shallow-land burial of wastes to the current focus on engineered low-level waste disposal methods, as experience, knowledge, and public awareness have grown. In particular, in response to the LLRWPA, the NRC expanded the scope of its low-level waste research to accelerate the development of sound technical bases for regulatory decisionmaking regarding engineered low-level waste disposal methods.

Materials and engineering research is being conducted to independently confirm the technical basis used to estimate releases from low-level waste disposal facilities. The States are developing disposal facilities, whose performance relies more heavily on engineered materials, such as concrete and bitumen, than the present generation of disposal facilities. The research results will be used to predict the long-term performance of these materials in low-level waste disposal facilities.

During FY 1992-1993, the NRC will continue studies to confirm the technical bases and will revise regulatory guidance, if necessary, on low-level waste form characteristics and stability. Also during FY 1992-1993, the NRC will continue studies of solidified low-level waste. Emphasis will shift to evaporator concentrates and filter sludges from nuclear power stations and decontamination wastes. The stability of actual solidified low-level waste from nuclear power plants will be compared with 10 CFR Part 61 requirements. During FY 1992-1993, the NRC will continue research on: (1) long-lived and hard-to-measure radionuclides to characterize activated metals and to assess the chemical content of low-level waste; (2) the behavior and composition of radionuclides and complexants in decontamination concentrates and the role of chelating agents in enhancing mobility of radionuclides released from decontamination low-level waste; (3) leaching of radionuclides, chelating agents, and chemicals in cement solidified evaporator concentrates, filter sludges, and decontamination waste collected from nuclear power facilities; and (4) test procedures developed to evaluate microbial degradation and chemical effects on stabilized low-level waste. In FY 1993, the NRC will begin research on the service lives of barrier coatings and joint sealants in concrete and the durability of super plasticizers and epoxy-coated reinforcing bar used in concrete.

Hydrology and geochemistry research is being conducted to refine the understanding of the geochemical, biologic, and hydrologic processes that control environmental transport of radionuclides, particularly in groundwater. The research results will be used to support licensing decisions for new low-level waste disposal facilities.

## Nuclear Safety Research

---

During FY 1992-1993, the NRC will investigate carbon-14 transfer and uptake coefficients in plants for the soil-to-root and air-to-leaves pathways used to evaluate radionuclide exposure at low-level waste disposal sites. Also during FY 1992-1993, the NRC will: (1) continue work on modeling and model validation for assessment of groundwater flow and radionuclide transport at low-level waste disposal sites; (2) continue an assessment of the role played by soil in controlling radionuclide transport; (3) continue field and laboratory studies of unsaturated flow and transport in heterogeneous porous media; and (4) continue an assessment of the role played by organic complexants, microparticulates, and biotic processes in enhancing radionuclide movement.

Compliance assessment and modeling research is being conducted to independently confirm the technical basis used to estimate the release and transport of radionuclides from low-level waste disposal facilities. The research results are inherently coupled with the materials and engineering and the hydrology and geochemistry activities and will be used to support licensing decisions for new low-level waste disposal facilities.

In FY 1992, the NRC will complete development of a simplified source-term model for licensing purposes by using the Breach, Leach, Transport model and, in FY 1993, will complete the benchmarking of the source-term model. During FY 1992-1993, the NRC will continue participating in the international cooperative program on validation of geosphere transport codes (INTRAVAL).

In FY 1992, the NRC will issue: (1) the final rule on Low-Level Waste Manifest Information and Reporting, (2) the final rule that extends the regulatory scope of 10 CFR Part 61 to include above-ground disposal of low-level waste and requires applicants for low-level waste disposal facility licenses to develop quality assurance programs rather than quality control programs, and (3) an assessment of the compartment of Regulatory Guide 4.18 on environmental reports and its companion standard review plan, NUREG-1300, with 10 CFR Part 51.

Environmental policy and decommissioning research is being conducted to develop and coordinate radiation protection standards and guidelines for the decommissioning of facilities and sites associated with NRC-licensed activities. The research results will be used to establish criteria for release of areas containing radioactive material and to evaluate potential pathways and doses, and risks from public exposure to radioactive material.

The NRC's moratorium on implementation of the below regulatory concern policy will continue during FY 1992-1993. However the NRC will conduct a systematic assessment of the past exemption decisions and will continue to develop the technical basis for future agency decisions on waste disposal and recycling of materials and equipment.



## Nuclear Safety Research

---

During FY 1992-1993, the NRC will continue implementation efforts directed at decontamination/decommissioning activities including development of technical bases in support of a rulemaking to establish radiological criteria for decommissioning. This rulemaking will involve extensive public participation.

During FY 1992-1993, the NRC will continue efforts to examine the potential pathways and doses from reconcentration of radioactive materials released into sanitary sewers, including patient excreta containing byproduct or naturally occurring and accelerator-produced radioactive materials, and the consequences of the release of such materials to the environment.

During FY 1992-1993, the NRC will initiate rulemaking and issue a proposed or final rule for revision of source material regulations (10 CFR Part 40) to ensure consistency with byproduct material regulations (10 CFR Part 30) and conformance with the new 10 CFR Part 20 requirements. During FY 1992-1993, the NRC will initiate rulemaking and will issue a proposed or final rule for: (1) Timeliness Requirements for Decommissioning Nonreactor Facilities, and (2) Resolution of a petition requesting Self-Guarantee as a Mechanism for Assuring Decommissioning Funding. During FY 1992-1993, the NRC will consider the need to develop rulemaking for: (1) Financial Assurance for Cleanup of Accidents for All Material Licensees and (2) Update of Decommissioning Funding Certification Amounts. In addition, the NRC will complete the analyses of the decommissioning data from the Shippingport reactor and will continue the collection of data on the decommissioning of other reactors.

**NUCLEAR MATERIAL AND LOW-LEVEL  
WASTE SAFETY AND SAFEGUARDS  
REGULATION**

NUCLEAR MATERIAL AND LOW-LEVEL WASTE SAFETY AND SAFEGUARDS REGULATION

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate ..... \$40,807

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Salaries and Benefits	\$25,382	\$28,362	\$29,851	\$1,489
Program Support	9,213	8,900	8,900	0
Travel	<u>2,072</u>	<u>2,010</u>	<u>2,056</u>	<u>46</u>
Total	\$36,667	\$39,272	\$40,807	\$1,535
(Staff)	(369)	(389)	(388)	(-1)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From FY 1992</u>
Maintain Current Services	
Personnel Compensation	\$1,489
Administrative Price Increases	<u>46</u>
Total	\$1,535

Maintain Current Services

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System. The administrative price increases reflect increased costs of transportation and per diem.

Program Requirements

There are no significant resource changes due to program requirements.

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

### DESCRIPTION OF PROGRAM

The Nuclear Material and Low-Level Waste Safety and Safeguards Regulation Program encompasses all NRC public health and safety, safeguards, and environmental activities related to the licensing and inspection of nuclear fuel cycle facilities, users of nuclear materials, the transportation of nuclear materials, the safe management and disposal of low-level radioactive wastes, the safe interim storage of spent fuel, and uranium recovery activities and related remedial actions. The program also includes an integrated agency effort to oversee decontamination and decommissioning of facilities and sites associated with NRC-licensed activities. Within this program, the NRC will assess the domestic safeguards environment and safeguards reviews for all licensing activities involving the export of special nuclear material.

The Nuclear Material and Low-Level Waste Safety and Safeguards Regulation Program comprises three major program elements: Nuclear Material Safety, Nuclear Material Transportation and Safeguards, and Low-Level Waste. The Nuclear Material Safety program element is conducted to ensure that licensees protect the public health and safety, worker safety, and the environment when radioactive material is handled and used during normal operations and abnormal events. The Nuclear Material Transportation and Safeguards program element is conducted to ensure that licensees transport nuclear materials in packages that provide a high degree of safety in the event of a transportation accident and they deter, detect, and protect against radiological sabotage, theft, diversion, or unauthorized production of special nuclear material at licensed nuclear fuel cycle facilities and in transport. In addition, NRC's international safeguards responsibilities are carried out within this program element. The Low-Level Waste activities in this program are mandated by the Low-Level Radioactive Waste Policy Act (LLRWPA) of 1980, the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985, the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, and portions of the West Valley Demonstration Project Act of 1980.

The LLRWPA makes each State responsible for providing for the disposal of low-level waste generated within its borders. The LLRWPA gives the NRC responsibility for: defining low-level waste, licensing the Federal disposal of commercial low-level waste (as defined in 10 CFR Part 61), granting individual waste generators emergency access to non-Federal disposal facilities, providing regulatory guidance on alternatives to conventional shallow land burial, and ensuring that license reviews can be completed within 15 months.

The UMTRCA directs the NRC to develop regulations and to license the disposal of mill tailings from licensed uranium mills. Congressional action also directed that the NRC regulations be amended to conform to the Environmental Protection Agency (EPA) standards for both radiation and groundwater protection. The UMTRCA directs the NRC to approve licensee plans for disposing of mill tailings, to review and concur in the site-by-site implementation of the DOE program for remedial actions concerning mill tailings, and to license DOE possession of these sites.

Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

The program support funds and staff for each of the three Nuclear Material and Low-Level Waste Safety and Safeguards Regulation program elements are shown below. The program support funds are allocated for work done by Department of Energy (DOE) contractors and commercial contractors for the NRC. The narrative that follows describes these program elements, gives the reasons why the resources are needed, and explains significant resource changes from FY 1992.

<u>Program Element</u>	<u>FY 1991</u>		<u>FY 1992</u>		<u>FY 1993 Estimate</u>		<u>Change From</u>	
	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>FY 1992</u>	
Nuclear Material Safety	\$5,102	209	\$4,650	215	\$4,900	215	\$250	0
Nuclear Material Transportation and Safeguards	1,798	81	1,700	81	1,500	81	-200	0
Low-Level Waste	<u>2,313</u>	<u>79</u>	<u>2,550</u>	<u>93</u>	<u>2,500</u>	<u>92</u>	<u>-50</u>	<u>-1</u>
Total	\$9,213	369	\$8,900	389	\$8,900	388	\$0	-1

Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

NUCLEAR MATERIAL SAFETY

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$5,102 (209)	\$4,650 (215)	\$4,900 (215)	\$250 (0)

This program element is conducted to ensure that licensees protect the public health and safety, worker safety, and the environment during the handling and use of radioactive material during normal operations and abnormal events. This program element comprises three major activities: (1) Fuel Facility and Spent Fuel Storage Licensing and Inspection, (2) Licensing and Inspection of Nuclear Material Users, and (3) Event Evaluation.

RESOURCE CHANGES

The program support increase in FY 1993 is needed for NRC to inspect implementation of the medical quality management rule by medical licensees.

1. FUEL FACILITY AND SPENT FUEL STORAGE LICENSING AND INSPECTION

This activity comprises NRC licensing and inspection of the nuclear fuel cycle after milling, the interim storage of spent fuel outside of reactor spent fuel pools, and the safe interim storage of spent fuel. It includes: (1) the conversion of uranium ore concentrates (yellowcake) into uranium hexafluoride prior to enrichment, (2) enrichment, (3) the development and fabrication of reactor fuel, (4) the NRC licensing and inspection of spent fuel storage activities, and (5) the safe storage of fresh fuel at reactor sites until the reactor core is initially loaded with fuel. This requires detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to ensure safe operations. This activity includes the safety overview of DOE's high-level waste solidification activities and decontamination and decommissioning activities at the former reprocessing facility in West Valley, New York. Also, this activity includes staff actions necessary to conduct health and safety licensing reviews and inspections for the construction and operation of a centrifuge uranium enrichment facility in Homer, Louisiana.

The NRC will complete the review and evaluation of approximately 90 license applications (new, amendment, and renewal) and topical reports for nuclear fuel cycle facilities during each year of FY 1992-1993. The NRC has recently increased the license term for major operating fuel cycle licensees from a 5-year

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

period to a 10-year period. The NRC will also review safety demonstration submittals prepared by the major nuclear fuel cycle licensees biennially and will amend the licenses accordingly. In FY 1993, the NRC will enhance its nuclear criticality safety program to train NRC staff in the criticality safety discipline. The NRC will conduct routine, scheduled health and safety inspections of approximately 25 fuel cycle facilities or sites each year during FY 1992-1993 to provide reasonable assurance that unsafe conditions, involving unnecessary and harmful radiation exposure to employees and the public, do not develop and that radioactive materials are properly controlled to prevent a nuclear criticality accident.

In addition to the normal inspections, approximately five enhanced operational safety assessments or special team inspections will be conducted each year in FY 1992-1993 at various nonreactor facilities. These safety assessments will be coordinated with the EPA and the Occupational Safety and Health Administration, as appropriate. During FY 1992-1993, enhanced operational safety assessments will be conducted at selected fuel facilities and large materials licensees approximately 1 year before the license is renewed. The assessment will help to identify important safety issues that need to be resolved while the license is being renewed. As required, specialized expert advice will be provided for licensees that have experienced problems. The NRC will continue to implement lessons learned from routine inspections, enhanced fuel facility safety assessments, and the identification of radiological and nonradiological risks. New requirements will be incorporated into licenses through amendments and license renewals.

As required by the West Valley Demonstration Project Act of 1980, the NRC will continue to consult with DOE on the planning and safety analyses for the high-level waste solidification demonstration project at West Valley, New York. The NRC will also respond to DOE requests for consultation, as DOE initiates analysis of alternatives for decontamination and decommissioning and eventual site closure. The NRC's close consultation with DOE is important to ensure that the resulting solidified high-level waste will be acceptable for disposal in the national high-level waste repository and to provide any necessary guidance to ensure the safety of the West Valley facility.

The DOE system for inventory and forecast of spent fuel and high-level radioactive waste generation will continue to be monitored closely to enable timely and adequate waste management and early warning of capacity problems. The NRC will continue to maintain awareness of any potential delays in the DOE waste disposal program. In FY 1992-1993, the NRC will conduct inspections of the spent fuel storage facilities and onsite inspection of concrete vaults and casks at reactors.

### 2. LICENSING AND INSPECTION OF NUCLEAR MATERIAL USERS

This activity comprises NRC licensing and inspection of approximately 7,500 medical, academic, industrial, and commercial users of nuclear and other radioactive material. These uses include: medical diagnosis and therapy,

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

medical and biological research, academic training and research, industrial gauging and nondestructive testing, production of radiopharmaceuticals, fabrication of such commercial products as smoke detectors, and evaluation of sealed sources and devices. Detailed health and safety reviews and inspections of licensee procedures and facilities are performed to provide reasonable assurance of safe operations and safe product development.

The NRC will complete the review and evaluation of approximately 5,200 to 5,400 applications for new licenses, license amendments, license renewals, and sealed source and device designs for the use of radioactive material each year during FY 1992-1993. The agency will conduct approximately 3,200 routine health and safety inspections and closeout inspections of materials licensees each year during FY 1992-1993. These inspections are designed to ensure that conditions that could cause unnecessary radiation exposure to employees, the public, and the environment are promptly identified and to ensure prompt enforcement actions. Also, the NRC will continue to conduct inspections at broad scope facilities including the use of small team inspections to conduct more indepth quality inspections and review licensee operational issues at these facilities.

Under a general nuclear materials license, a person may use certain devices containing radioactive materials, without obtaining a specific NRC license, but the person must comply with applicable NRC rules. Several contamination incidents, such as the detection of radioactive contamination from certain static eliminator devices, have raised questions about the effectiveness of current general-license regulations and prompted the NRC to conduct a general-license study. Improvements cited in this study include changing the general-license regulations, testing safety features of sealed source and device designs to ensure devices are built as designed and to determine the risk of exposure if safety features fail, and improving the accounting of approximately 600,000 generally licensed devices. During each year of FY 1992-1993, the NRC will implement the recommendations of the general-license study on a priority basis.

To improve quality management of medical licensees, in FY 1992 the NRC will begin to implement the medical quality management rule by conducting a series of workshops for medical-use licensees to ensure they understand the rule and during each year of FY 1992-1993, the NRC will follow up by conducting onsite inspections of medical licensees to ensure prompt and appropriate implementation of the rule. This effort will entail inspecting licensee quality management programs and reviewing proposed alternative measures to ensure quality. Based in part on these efforts, the NRC will analyze the benefits and impacts of the quality management rule and will determine if supplementary guidance is needed in order to implement the rule.

In each year of FY 1992-1993, the NRC will continue working with the American Society of Non-destructive Testing, the State of Texas, and others to improve radiography safety. Also, the NRC will continue to conduct inspections at temporary and field radiography job sites, where actual operations are being performed. Recognizing that industrial radiography causes the largest number of overexposure of employees to radiation, the NRC has endorsed certification



of radiographers and has promulgated new safety standards for equipment, in an effort to reduce these unnecessary exposures and to improve radiography safety. The NRC will develop a regulatory basis for requiring third-party certification of radiographers and will enter into rulemaking to require third-party safety certification of radiographers.

### 3. EVENT EVALUATION

This activity comprises the review of licensee operational data and incident response coordination and training for safety events involving nuclear materials and fuel cycle facilities. The NRC will maintain the ability to respond to and evaluate safety events involving nuclear materials. On the basis of licensee performance and the associated levels of perceived risk, the NRC will increase regulatory oversight of licensees that have experienced problems. Recent events include: a number of lost and damaged radioactive gauges, numerous medical misadministrations of nuclear materials, and operational problems at fuel cycle facilities.

The NRC will continue to maintain its capabilities to respond to unusual nuclear emergencies by training emergency response staff, and will prepare for and participate in exercises involving various accident scenarios at the NRC Operations Center. Radiological contingency planning and coordination with the Federal Emergency Management Agency (FEMA) and the Agreement States, will continue during each year of FY 1992-1993. The NRC will initiate statistical analysis of incident and inspection findings to determine any potential problem areas in FY 1992 and will continue the analysis in FY 1993.

The NRC will continue to review and analyze operational safety data received from nuclear fuel cycle facilities and radioactive materials licensees. In each year of FY 1992-1993, the NRC will continue to move the project to evaluate the operational performance of fuel cycle and material licensees into the implementation stage. The NRC will shift its focus from developing performance measures to evaluating and tracking licensees or categories of licensees and assessing the accuracy, consistency, and appropriateness of the performance measures.

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

cannot be used as diversion paths for nuclear materials. During FY 1992-1993, the NRC will perform the safeguards reviews for licensing the Louisiana Energy Services' Claiborne Enrichment Center.

### 3. THREAT AND EVENT ASSESSMENT AND INTERNATIONAL SAFEGUARDS

This activity is conducted to evaluate the "threat environment" to ensure the continued validity of the NRC regulatory design-basis threats for theft and for radiological sabotage (10 CFR 73.1). It also includes the following efforts: safeguards incident response training, joint NRC/DOE operation of the national data base and information support system for tracking of nuclear material (Nuclear Materials Management and Safeguards System), strengthening International Atomic Energy Agency (IAEA) safeguards, and implementation of the safeguards agreement between the United States and the IAEA.

The threat environment comprises all reported information on potential or actual threats worldwide; adversary characteristics, intentions, and capabilities of terrorist group activities; and any relevant domestic or foreign events of a nuclear or non-nuclear nature. On the basis of a continuing evaluation of the threat environment and interagency liaison, an assessment of the validity of the NRC design-basis threat statements will be documented formally on a semiannual basis. Assessments of reported threats to NRC licensees will provide the basis for an appropriate response to threats as they are received and evaluated by the NRC Information Assessment Team.

The NRC will provide response procedure training to incident response teams for transportation or safeguards-related events at fuel cycle facilities. The NRC will continue its liaison with other Federal and State agencies in support of incident response responsibilities.

Another basic component of this activity is the continual review, analysis, and reporting of safeguards operational data. The review and evaluation of threat information, safeguards operational data, and the analysis of trends will continue each year during FY 1992-1993. The NRC will publish, annually, revisions to the Safeguards Summary Event List.

During FY 1992-1993, the NRC will continue to participate with other Federal agencies in the development of bilateral agreements governing the export and import of nuclear equipment and materials. During FY 1992-1993, the NRC will continue to participate as a member of the interagency U.S. Physical Protection Review Team to conduct technical information exchanges with representatives of foreign governments on matters of physical protection procedures and practices and to host reciprocal visits to the United States. During FY 1992-1993, the NRC will continue to support IAEA-sponsored international safeguards activities concerned with nuclear nonproliferation.

The U.S./IAEA safeguards agreement places selected U.S. nuclear facilities under IAEA safeguards. During FY 1992-1993, the NRC will continue to issue license amendments, review and approve compilation of data on nuclear materials

Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

transactions, and inventory data for these facilities. The NRC will assist the IAEA in inspection activities at selected U.S. nuclear facilities, as required. The NRC will also continue to participate in the management and direction of the Technical Support Coordinating Committee, U.S. Interagency Action Plan Working Group, and other efforts associated with IAEA safeguards.

LOW-LEVEL WASTE

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$2,313 (79)	\$2,550 (93)	\$2,500 (92)	-\$50 (-1)

This program element is conducted to ensure the effective and efficient discharge of NRC responsibilities under LLRWPA, LLRWPA, UMTRCA, and portions of the West Valley Demonstration Project Act of 1980. This program element consists of three major activities: (1) Low-Level Waste Disposal Licensing and Inspection, (2) Uranium Recovery Licensing and Inspection, and (3) Decommissioning.

RESOURCE CHANGES

Staff will decrease in FY 1993 due to the reduction in the number of documents submitted for NRC review by DOE which describe remedial actions to be taken at mill tailings sites. This does not impact DOE proceeding with its remedial actions.

1. LOW-LEVEL WASTE DISPOSAL LICENSING AND INSPECTION

This activity constitutes the NRC's licensing and inspection effort for those facilities under NRC jurisdiction that are engaged in near-surface, land disposal. Regulatory responsibilities are implemented through detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to ensure safe operations.

The NRC also will provide limited technical assistance to the Agreement States; the low-level waste compacts; State regulatory bodies; and the States of Nevada, South Carolina, and Washington, where the existing low-level waste disposal sites are located. Upon request, the NRC will provide technical assistance to up to six Agreement States (California, Illinois, Nebraska, New York, North Carolina, and Texas) that are in various stages of developing and implementing plans to construct low-level waste disposal facilities. In FY 1992-1993 the NRC will continue to provide prelicensing guidance to potential NRC applicants for low-level waste disposal facility licenses.

During FY 1992-1993, the NRC will continue to develop an in-house performance assessment modeling capability in the area of source-term evaluation for timely completion of reviews as mandated by the LLRWPA and to provide guidance to

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

potential licensees and Agreement States on low-level waste disposal. Performance assessment products will be made available to States and potential licensees. During FY 1992-1993, the NRC, in coordination with the EPA, will collect data and develop a national mixed-waste profile to assist States and site developers in the planning and development of treatment and disposal facilities for mixed waste. During FY 1992-1993, the NRC will continue to coordinate with EPA to avoid dual regulation under the Clean Air Act and the Atomic Energy Act of air emissions of radionuclides from nuclear facilities that are licensed by NRC or the Agreement States.

The NRC will review three topical reports on waste solidification processes, waste classification systems, and improved disposal containers each year during FY 1992-1993. In FY 1992-1993, the NRC will coordinate with South Carolina to review the site-closure plan for the special nuclear material license at Barnwell.

During FY 1992-1993, the NRC will continue to conduct and improve the inspection program at waste generator facilities and at operating and developing low-level waste disposal facilities. This program will address construction and operation of disposal facilities, and will also address radiation protection and environmental surveillance and will update inspection procedures applied in assessing generator compliance with 10 CFR Part 61 waste form requirements. During FY 1992-1993, low-level waste inspections for waste form and classification will continue at reactor sites and for special nuclear material at Hanford, Washington, and Barnwell, South Carolina.

### 2. URANIUM RECOVERY LICENSING AND INSPECTION

This activity comprises the NRC's licensing and inspection of uranium mills, heap-leaching facilities, ore-buying stations, commercial solution mining, uranium extraction research and development projects, and commercial disposal of radioactive tailings or waste as defined in section 11e(2) of the Atomic Energy Act of 1954, as amended. This requires detailed health, safety, and environmental reviews and inspections of licensee procedures and facilities to provide reasonable assurance of safe operations; the development of NRC's regulatory guidance to implement the EPA standards for regulating mill tailings; and the site-by-site approval of licensee plans for disposal of mill tailings and other radioactive material, including material defined in section 11e(2) of the Atomic Energy Act.

The NRC will complete the review and evaluation of approximately 70 license applications (new, amendment, and renewal) for uranium recovery facilities during each year of FY 1992-1993. Approximately 135 licensee monitoring reports will be reviewed to assess licensee performance. The NRC will also conduct approximately 35 inspections of uranium recovery facilities during each year of FY 1992-1993. These inspections will thoroughly review the licensee's program and implementation of license conditions to protect the public health and safety and the environment. Also during FY 1992-1993, the NRC will review an

application to dispose of uranium and thorium byproduct materials at a site near Clive, Utah.

This activity also includes the NRC's efforts related to the review and evaluation of the remedial actions to be taken by DOE at 24 mill tailings piles at 22 sites, as well as at several thousand contaminated properties located near the sites. The NRC reviews and concurs on remedial action plans and proposed designs for the site and properties in the vicinity of the site, and concurs in DOE's plans for long-term control of radiation or radioactive and nonradioactive releases from the site and for the protection and cleanup of groundwater. Once the remedial action has been completed, the NRC is responsible for licensing DOE for long-term care and site maintenance.

The NRC has already concurred in remedial action plans for 10 of the 22 sites. During FY 1992-1993, the NRC will continue to review and concur in DOE's proposed remedial action plans and related documents. The NRC expects to complete the review of approximately 150 documents during each year of FY 1992-1993. Based upon schedules provided by DOE, NRC expects to complete the review of remedial action plans at eight sites in FY 1992 and two sites in FY 1993. During FY 1992-1993, the NRC will continue to concur in completed remedial actions, groundwater restoration plans, and long term surveillance plans for all the sites.

During FY 1992-1993, the NRC will implement a program for dam safety for all NRC licenses and coordinate activities with FEMA. This program was developed to improve the effectiveness of NRC's implementation of the Federal Guidelines on Dam Safety.

### 3. DECOMMISSIONING

This activity comprises the NRC's integrated requirements for the decontamination and decommissioning of facilities and sites associated with NRC-licensed activities. Decommissioning involves safely removing a facility from service and reducing residual radioactivity to a level that permits the property to be released for unrestricted use. This action is to be taken by a licensee before termination of a license.

During FY 1992-1993, the Office of Nuclear Material Safety and Safeguards will continue to manage a program for materials facility decommissioning to review submittals resulting from the decommissioning rule. The submittals will include financial assurance certifications and decommissioning funding plans for approximately 10 new applications per year and 10 license terminations per year; approximately 26 decommissioning funding plan reviews of existing licenses will be completed during each year of FY 1992-1993. Two decommissioning funding plans for major fuel cycle facilities will be reviewed in FY 1992. During FY 1992-1993, the NRC will continue the review of approximately 18,000 materials and fuel cycle facilities decommissioned since 1965, to ensure that these sites were adequately decontaminated before their licenses were terminated. The review began by screening records to identify whether followup surveys and more detailed site characterization are appropriate for some sites. On the basis of this

## Nuclear Material and Low-Level Waste Safety and Safeguards Regulation

review, the NRC will take appropriate actions to ensure that the sites have been adequately decontaminated.

During FY 1992-1993, the NRC will continue to conduct licensing reviews and inspections for shutdown power reactors having a license to possess nuclear material. In FY 1992, the NRC will complete the review of the final decommissioning plans for Fort St. Vrain, Rancho Seco, and Shoreham. During FY 1993, the NRC expects to receive and review the decommissioning plan for Three Mile Island Unit 2.

The NRC will conduct followup surveys and reviews of documentation for approximately 50 test and research reactors during each year of FY 1992-1993. Site-specific radiological assessments will be performed for those sites having residual contamination in excess of NRC release criteria.

During FY 1992-1993, the NRC will implement the objectives of the Site Decommissioning Management Program for the timely decontamination and decommissioning of material and fuel facilities. This program includes: (1) the timely cleanup of contamination of approximately 40 known sites, (2) the review of prior burials of radioactive material under 10 CFR 20.302 and 20.304, and (3) the development of policy and regulations to ensure efficient and consistent licensing actions, to minimize future problems regarding contaminated sites, including revisions of regulations, regulatory guides, and policy statements.

**HIGH-LEVEL NUCLEAR WASTE  
REGULATION**



HIGH-LEVEL NUCLEAR WASTE REGULATION

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate.....\$21,100

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Salaries and Benefits	\$5,365	\$5,760	\$6,228	\$468
Program Support	12,185	12,720	14,600	1,880
Travel	<u>317</u>	<u>272</u>	<u>272</u>	<u>0</u>
Total	\$17,867	\$18,752	\$21,100	\$2,348
(Staff)	(78)	(79)	(81)	(2)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From FY 1992</u>
Maintain Current Services	
Personnel Compensation	\$318
Program Requirements	<u>2,030</u>
Total	\$2,348

**Maintain Current Services**

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System.

**Program Requirements**

The resource increase in FY 1993 is needed to evaluate the Department of Energy's (DOE's) surface-based testing at Yucca Mountain, including reports on site characterization and onsite reviews; to evaluate DOE's design of its exploratory

5

## High-Level Nuclear Waste Regulation

studies facility; to develop and refine repository performance assessment models and codes; and to consult with DOE on its monitored retrievable storage facility program prior to submission of its license application. The increase is also needed to develop a technical basis to assess potential geologic hazards to the Yucca Mountain site and to initiate research on the radionuclide source term of spent fuel. This increase is needed for NRC to continue to meet DOE's schedule for its high-level waste repository program.

### DESCRIPTION OF PROGRAM

The High-Level Nuclear Waste Regulation Program encompasses all of NRC's public health and safety licensing, inspection, and environmental reviews for the safe management and disposal of high-level radioactive wastes (including spent fuel); research to assess the safety of high-level waste management, storage, transportation, and disposal; independent safety advice on NRC regulatory actions and the use of the Licensing Support System (LSS) for the submission and management of documents in the repository licensing proceeding.

The regulatory activities in this program are mandated by the Nuclear Waste Policy Act (NWPA) of 1982 and the Nuclear Waste Policy Amendments Act (NWPAA) of 1987. The NWPA specifies a detailed approach for the long-range undertaking of high-level waste disposal, with DOE having operational responsibility and the NRC having regulatory responsibility. This undertaking involves a complex, integrated system of waste handling, transportation, interim and retrievable storage, and ultimate deep geologic disposal of high-level radioactive waste, requiring the protection of public health, safety, and the environment over thousands of years. The NWPAA directs DOE to characterize only one candidate site, the Yucca Mountain site in the State of Nevada, and to terminate site-specific activities at all other candidate sites.

The NRC's high-level waste repository program is proceeding according to the process established by the NWPA, as amended, and supports the current DOE schedule which is reflected in DOE's Project Decision Schedule, Revision 1, dated June 1991, as modified by DOE due to the delay to November 1993 for starting construction of the exploratory studies facility. The NRC is developing guidance and license review criteria on a priority basis to ensure that all required licensing support and guidance documents are complete and available prior to submission of the license application by DOE in 2001. Completion of this guidance is necessary and independent of DOE's site characterization activities. The NRC has plans to conduct prelicensing reviews and to monitor DOE's site characterization activities beginning in FY 1992.

The CNWRA, a federally funded research and development center under contract to the NRC, has been established to provide technical assistance and conduct research for NRC's High-Level Nuclear Waste Regulation Program. The center provides support, under NRC direction, for NRC activities related to the geologic repository and monitored retrievable storage facility, transportation, environmental, and other activities associated with the storage and disposal of

## High-Level Nuclear Waste Regulation

nuclear waste under the NWPA and NWPAA. The NRC will continue to sponsor the CNWRA as a federally funded research and development center during FY 1992-1993. This sponsorship will include providing for the administrative, management, and quality assurance procedures and practices necessary to operate the CNWRA.

This program comprises four major program elements: High-Level Waste Licensing, Assessing the Safety of High-Level Waste Disposal, Independent Safety Advice and Adjudicatory Reviews, and the Licensing Support System. Together, these program elements are designed to ensure that high-level nuclear waste is managed and disposed of safely.

The program support funds and staff for each of the four High-Level Nuclear Waste Regulation program elements are shown below. The program support funds are allocated for work done by the NRC's Center for Nuclear Waste Regulatory Analyses (CNWRA) and some commercial contractors for the NRC. The narrative that follows describes these program elements, gives the reasons why the resources are needed, and explains significant resource changes from FY 1992.

<u>Program Element</u>	<u>FY 1991</u>		<u>FY 1992</u>		<u>FY 1993 Estimate</u>			
	<u>Enacted</u>		<u>Estimate</u>		<u>Request</u>		<u>Change From</u>	
	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>Funds</u>	<u>Staff</u>	<u>FY 1992</u>	<u>Funds Staff</u>
High-Level Waste Licensing	\$7,320	58	\$7,350	58	\$8,050	60	\$700	2
Assessing the Safety of High-Level Waste Disposal	3,990	8	4,100	8	5,700	8	1,300	0
Independent Safety Advice and Adjudicatory Reviews	75	5	50	5	50	5	0	0
Licensing Support System	<u>800</u>	<u>7</u>	<u>920</u>	<u>8</u>	<u>800</u>	<u>8</u>	<u>-120</u>	<u>0</u>
Total	\$12,185	78	\$12,720	79	\$14,600	81	\$1,880	2

High-Level Nuclear Waste Regulation

HIGH-LEVEL WASTE LICENSING

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$7,320	\$7,350	\$8,050	\$700
(Staff)	(58)	(58)	(60)	(2)

This activity is conducted to ensure the effective, efficient, and timely discharge of NRC's licensing responsibilities under the NWPA and NWPA. This program element comprises two major activities: (1) High-Level Waste Repository Licensing and (2) High-Level Waste Storage and Transportation.

RESOURCE CHANGES

The staff increase in FY 1993 is primarily for additional reviews of DOE's site characterization technical reports related to surface-based testing, exploratory studies facility design reports, onsite reviews of DOE surface-based testing, increased efforts in developing and refining repository assessment models and codes, and increasing precicensing consultation with DOE for the monitored retrievable storage facility program.

The program support increase in FY 1993 is for CNWRA assistance for additional reviews of DOE's site characterization technical reports and for increased efforts in developing and refining repository performance assessment models and codes.

Reviews of DOE's site characterization technical reports and onsite activities help NRC staff determine whether DOE's data collection methods are appropriate, determine the significance of the data being collected to the assessment of repository performance, and resolve site issues. The NRC will consolidate repository subsystem models and codes into a repository system performance assessment predictive model. This model will be updated as data become available and used to evaluate DOE's site characterization program, the Environmental Protection Agency's (EPA's) high-level waste standard, and NRC's regulations; to provide information for developing regulatory guidance; and to develop and maintain the NRC staff's capability to review DOE's repository performance assessment to determine compliance with the EPA high-level waste standard and NRC regulations.

1. HIGH-LEVEL WASTE REPOSITORY LICENSING

This activity consists of work required to implement NRC's responsibility to license and inspect the national high-level waste repository. To fulfill these responsibilities without causing undue delay or unnecessary rework in the DOE program, ongoing interaction and prelicensing consultation will be conducted between the NRC and DOE. To provide for an effective and efficient licensing process, the NRC will develop methods for demonstrating compliance to permit the independent determination of the adequacy of DOE licensing information. The NRC provides guidance to help ensure that the DOE program develops essential and acceptable data, provides onsite overview of DOE activities, identifies and resolves issues, and reviews and evaluates DOE submittals.

Guidance and Review Capability Development

To provide reasonable assurance that DOE's license application can be reviewed within the 3-year period mandated by the NHPA, the NRC will provide, by FY 1998, appropriate and timely regulatory guidance to DOE to help ensure that potential licensing issues are identified and resolved in a timely manner and that DOE provides complete and high-quality information required by the NRC for licensing.

During FY 1992-1993, the NRC, with support from the CNWRA, will continue to conduct a systematic regulatory analysis (SRA) of 10 CFR Part 60 to identify regulatory and technical uncertainties, and to form the basis for developing rulemakings and staff technical positions needed to reduce these uncertainties. The main focus of the SRA will be the development of compliance determination methods (i.e., acceptance criteria) and compliance determination strategies (review procedures) which together will form the technical substance of the license application review plan (LARP). The LARP will be the primary document used by the NRC staff to review DOE's license application and it will also assist in the staff's review of DOE's site characterization reports, topical reports, technical reports, and issue resolution reports. During FY 1992-1993, the NRC, with support from the CNWRA, will continue to develop the LARP. The SRA also will develop and review information needs that have to be provided by DOE, which will be incorporated into the license application format and content regulatory guide (FCRG). A draft of the FCRG was published in FY 1991. The Office of Nuclear Regulatory Research is continuing to develop the final FCRG.

During FY 1992-1993, the SRA will be primarily concerned with identifying technical uncertainties and developing compliance determination strategies and methods for regulatory requirement topics. There are 91 topics that will require SRA as an input to LARP prior to its issuance. The schedule for processing these topics is determined by the urgency of the need for guidance or the degree of technical uncertainty. The SRA will be updated periodically with new information from DOE's site characterization activities and NRC's performance assessment results.

A majority of the uncertainties related to the requirements of 10 CFR Part 60 will be reduced in the FCRG and the LARP. Other uncertainties may be reduced

## High-Level Nuclear Waste Regulation

through rulemaking or staff technical positions. During each year of FY 1992-1993, the NRC, with support from the CNWRA, will prepare two staff technical positions, based on the need to resolve uncertainties identified through the SRA process. The NRC will solicit comments on these documents from States, local officials, and Indian tribes. Staff technical positions provide guidance to DOE on how to demonstrate compliance with the regulations.

During FY 1992-1993, the NRC will conduct performance assessments of the repository system on an iterative basis. This process will continue until DOE submits a license application for repository system performance. The process uses predictive models and codes to obtain quantitative estimates of performance based on emerging data and increased understanding of the phenomena on which the models are based. Iterative performance assessments also develop the NRC staff's capability to evaluate DOE's site characterization program, EPA's high-level waste standard, and NRC's regulations; provide information for developing regulatory guidance; and develop and maintain the NRC staff's capability to review DOE's repository performance assessment, which will be part of the license application.

During 1992-1993, the NRC will also continue development of an independent modeling capability for evaluating the performance of the engineered barrier system, including the specific waste form part of the engineered barrier system; groundwater travel time/disturbed zone; probabilistic faulting and seismic hazard analysis; tectonics; and other topics that will be identified by SRA in FY 1992-1993.

The NRC will continue to review and comment on DOE's amendments to the Mission Plan, the Project Decision Schedule, and other programmatic documents to help ensure that WPA and NWPA statutory actions are completed and the schedules are met. In addition, as required under the NWPA, the NRC will support the Nuclear Waste Technical Review Board and the Nuclear Waste Negotiator, as requested.

### Quality Assurance

The NRC, with support from the CNWRA, will continue to evaluate the DOE quality assurance plans and their implementation through oversight of the DOE waste program and the audit of a sample of DOE and DOE-contractor quality assurance programs for site characterization. During each year of FY 1992-1993, the NRC will conduct up to 11 quality assurance audits of DOE's high-level waste repository program. The objective of these audits is to identify and resolve concerns with DOE's program before significant data collection activities are performed during site characterization. The NRC will also conduct onsite, quality assurance visits and surveillances to evaluate in detail the implementation of DOE's program in specific technical areas and to better choose areas that may need detailed audits.

## High-Level Nuclear Waste Regulation

### Site Characterization Reviews

During FY 1992-1993, the NRC, with support from the CNWRA, will continue to review DOE's site characterization plan semiannual progress reports. These reports focus on: (1) new information about the site and performance estimates, (2) new issues and plans to resolve them, (3) changes to the original plans and schedules, and (4) DOE's progress toward resolving potential licensing issues.

During FY 1992-1993, DOE is expected to issue approximately 60 study plans. These are detailed plans and procedures that implement the site characterization plan. The NRC will conduct a screening review of all study plans issued by DOE and will also conduct detailed technical reviews of approximately 20 percent of selected plans.

The NRC, with support from the CNWRA, will review major design reports during FY 1992-1993; a review of DOE's Exploratory Studies Facility Alternatives Design Report is scheduled for FY 1992. NRC reviews of DOE technical reports, which document the results of DOE's site characterization work, will begin in FY 1992 and continue through FY 1993.

The NRC-site liaison at the Yucca Mountain site in Nevada will continue during FY 1992-1993 in order to facilitate direct exchange of information with the DOE and the State of Nevada and to provide quality assurance and technical oversight of data, documents, and activities related to site characterization.

### 2. HIGH-LEVEL WASTE STORAGE AND TRANSPORTATION

This activity comprises the NRC's licensing and inspection activities related to the safe interim storage of spent fuel and high-level waste at a monitored retrievable storage facility and NRC activities related to the transportation of high-level radioactive waste.

Under the NWSA, as amended, the NRC is responsible for licensing any monitored retrievable storage facility. The monitored retrievable storage involves the receipt, handling, packaging, and storage of spent fuel and high-level waste in a facility that permits continuous monitoring and ready retrieval for subsequent shipment to a permanent repository. During FY 1992-1993, the NRC interactions with DOE are expected to increase as DOE begins to prepare documentation for the monitored retrievable storage facility license application that DOE plans to submit in CY 1995. The NRC will consult with DOE on preliminary activities and review DOE siting and preliminary design activities and criteria for a monitored retrievable storage facility.

The NRC will also review and evaluate new transportation container designs required for shipping high-level waste under the NWSA. Technical guidance will be provided to DOE during the design, engineering, certification, and fabrication of a prototypical family of truck and rail or barge transport container designs. The Commission will continue to emphasize the importance of compatibility among storage, transportation, and disposal designs to minimize handling of spent fuel

## High-Level Nuclear Waste Regulation

---

and high-level waste. The NRC expects to receive approximately two applications for certification of transportation container designs in FY 1992 and one in FY 1993.



ASSESSING THE SAFETY OF HIGH-LEVEL WASTE DISPOSAL

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	FY 1993 Estimate	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$3,990 (8)	\$4,400 (8)	\$5,700 (8)	\$1,300 (0)

The NRC's high-level waste research provides the technical basis needed by the NRC to independently evaluate the plans and license application being developed by the DOE for the packaging and permanent disposal of high-level radioactive wastes in a geologic repository at the Yucca Mountain site in Nevada. Specifically, NRC's high-level waste research activities are to include: (1) precicensing consultation with DOE, (2) guidance to DOE on technical issues to be addressed during site characterization, and (3) development of information supportive of NRC's independent review of DOE's site characterization activities. NRC's waste management research combines theoretical study with laboratory and field experiments to identify and quantify the physical and chemical processes and phenomena important to waste isolation so that the NRC can determine repository performance and quantify the uncertainties associated with characterization and measurement of these processes. All this work is integrated to support an independent high-level waste performance assessment methodology. Effort is also required to validate the models on which the methodology is based.

Efforts in this program element are focused on those technical issues that have the greatest uncertainty and importance to repository system performance. The technical issues of concern include the stability of underground structures; the integrity of the waste container; the interaction of the waste form and container with the environment at the disposal site; the effect of natural geologic processes on long-term performance of barriers on waste migrations; and the movement of particulate, dissolved, or gaseous radioactive material within the disposal facility and through the environment during and after the design life of the engineered components of the disposal system.

RESOURCE CHANGES

The FY 1993 funding increase will be used to develop a technical basis to assess potential geologic hazards to the Yucca Mountain site and to initiate research on the radionuclide source term of spent fuel. A problem of safety significance at the Yucca Mountain site is the potential for disruptive volcanic and seismic events that could damage the isolation capability of a repository and release an unacceptable amount of radionuclides. The NRC will use the results of this

## High-Level Nuclear Waste Regulation

work to (1) evaluate the probabilities and effects of those events, (2) develop a basis to evaluate compliance with its siting criteria, and (3) support rulemaking incorporating anticipated and unanticipated processes and events resulting from such geologic hazards. The NRC needs a defensible model of radionuclide release in unsaturated, fractured tuff to assess compliance with 10 CFR Part 60 as part of its license review process. This increase will allow NRC to begin to explore the use of DOE assumptions, data, and models related to radionuclide source term from spent fuel. Liquid and vapor flow in the unsaturated zone near emplaced high-level waste, coupled effects on radionuclide transport, seismic effects on underground structures, and seismic pumping could accelerate radionuclide release and transport. This research will also develop the knowledge base for defining the "disturbed zone" and for assessing seal performance and preferential water flow paths.

The NRC's high-level waste engineered systems research is focused on whether DOE's short-term, small-scale tests and experiments on waste packages and other engineered components of the repository system are appropriate and adequate to predict performance on the repository scale over the design lifetime. Engineered systems research also focuses on assessing the effects of the coupled interactions between the repository system components, including the host rock and groundwater, in the zone affected by waste heat and on the long-term stability of the engineered facility, including shaft and borehole seals, in an environment affected by periodic earthquakes, possible volcanic activity, and climatic change. In FY 1993, the NRC will begin research on assessing DOE models of the thermodynamics of the controlled release of uranium and transuranic elements from the engineered barrier system. Also in FY 1993, the NRC will begin a 5-year program to evaluate DOE conceptual designs of the engineered facility with respect to three-dimensional structural performance and the long-term geochemical stability of DOE proposed sealing materials in welded and nonwelded tuff. In FY 1993, the NRC will publish topical reports on: (1) the capabilities of computer codes to represent the fundamental dynamics of fractured rock in order to establish which codes can predict fractured rock behavior to an acceptable engineering tolerance, and (2) assessment of the effects of long-term exposure of DOE candidate container materials to a simulated repository environment.

The NRC's high-level waste geologic systems research is examining the uncertainties in the field investigation methods and data analysis techniques used by DOE to characterize the geohydrologic system and chemical interactions in order to provide both the environmental parameters for engineered system design and an evaluation of site performance. Geologic systems research is also needed to support the assessments of potentially disruptive geological scenarios as required under 40 CFR Part 191 and 10 CFR Part 60. As volcanism and seismicity are critical, potentially site-disqualifying issues, the relationship among seismicity, regional strain, and volcanism in the region around Yucca Mountain will require further study. It is extremely important to accurately evaluate the probability, nature, extent, and consequences of these phenomena at Yucca Mountain. In FY 1992, the NRC will begin modeling studies of heating on flow and transport in unsaturated, fractured welded tuff similar to Yucca

## High-Level Nuclear Waste Regulation

---

Mountain and, in FY 1993, will begin a 5-year, large-scale heater field test in unsaturated, fractured tuff at Apache Leap, Arizona, to assess these effects.

In FY 1993, the NRC will begin a 5-year research program on the dynamics of volcanic eruptions and magma intrusions under basin and range conditions and seismic hazards for use in performance assessment and the evaluation of engineered systems design. Also in FY 1993, the NRC will begin a 3-year research program on the effectiveness of natural hydrogeochemical tracers to assist in determining groundwater travel times and in understanding flow in unsaturated, fractured rock. The NRC will publish in FY 1993 a topical report on a critically peer-reviewed technical data base developed by the CNWRA that compiles geological, geochemical, and other data relevant to assessing geologic hazards, particularly volcanoes and earthquakes, to high-level waste disposal. During FY 1992-1993, the NRC will continue research on chemical behavior of geologic systems that are similar to Yucca Mountain with respect to geochemical processes and will test DOE models of radionuclide transport and chemical interactions. Also during FY 1992-1993, the NRC will continue to assess DOE and alternative approaches to modeling ion exchange and adsorption reactions, which could perform as an effective barrier to the transport of actinide and transuranic elements to the accessible environment in actual site performance and should be reflected in long-term performance assessment calculations.

The NRC's performance assessment research is focused on the degree of uncertainty and level of completeness in the performance modeling conducted by DOE to demonstrate compliance with NRC and EPA requirements over the 10,000-year (minimum) time period of regulatory concern. In FY 1993, the NRC will publish topical reports on: (1) assessment of potential importance of C-14 transport in the gaseous phase to high-level waste repository safety, (2) the development of a methodology for selecting detailed analysis scenarios that may disrupt high-level waste repository performance, (3) a methodology for testing the validity of performance assessment models and a demonstration of that methodology, and (4) NRC's participation in International Radionuclide Transport Validation (INTRAVAL).

As part of NRC's efforts to provide guidance to DOE, the NRC will continue work during FY 1993 on a final license application format and content regulatory guide and will issue the final guide in FY 1994. Following EPA's issuance of a proposed high-level waste standard in FY 1992, the NRC will initiate development of a proposed rule in FY 1993 on Elimination of Inconsistencies Between NRC Regulations and EPA High-Level Waste Standards.

INDEPENDENT SAFETY ADVICE AND ADJUDICATORY REVIEWS

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$75	\$50	\$50	\$0
(Staff)	(5)	(5)	(5)	(0)

This program is conducted to provide the Commission with independent technical review of and advice on the management and disposal of high-level nuclear waste and legal advice and assistance on high-level waste management issues.

ADVISORY COMMITTEE ON NUCLEAR WASTE

The Advisory Committee on Nuclear Waste (ACNW) provides a focused center of expertise for independent technical review of and advice on high-level waste regulatory activities. The ACNW is responsible for reviewing and providing advice on all aspects of nuclear waste management within the purview of NRC responsibilities, as directed by the Commission.

The work of the ACNW discussed in this program pertains only to high-level nuclear waste issues. Work in the area of low-level waste is discussed separately in the Special and Independent Reviews, Investigations, and Enforcement program under the Independent Safety Reviews and Advice program element. The ACNW's activities in the high-level waste area primarily focus on disposal, but it will also be involved with other aspects, such as the handling, processing, transportation, storage, and safeguarding of high-level nuclear wastes.

Specific examples of the work of the ACNW in the area of high-level nuclear waste management include the following: review proposed rulemakings, regulatory guides, and technical positions developed to clarify the intent of 10 CFR Part 60; continue to provide advice regarding implementation of the Environmental Protection Agency's high-level waste standards; review and comment on selected NRC staff activities associated with the characterization and design review of the proposed high-level waste repository; and review NRC research programs associated with high-level nuclear waste management and disposal. The ACNW will also be involved in activities related to development of a Monitored Retrievable Storage facility.

## High-Level Nuclear Waste Regulation

---

### OFFICE OF THE GENERAL COUNSEL

The Office of the General Counsel provides legal advice and assistance relating to storage, transportation, and disposal of high-level waste. This includes the development and review of NRC regulations and guides pertinent to licensing a high-level waste geological repository and a monitored retrievable storage facility. It also includes representation of the NRC in all areas which may impact the evidentiary hearings on the high-level repository application, through the review of material generated by NRC and by contacts with persons and entities outside of NRC.

LICENSING SUPPORT SYSTEM

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$800	\$920	\$800	-\$120
(Staff)	(7)	(8)	(8)	(0)

The LSS rule (10 CFR Part 2) assigns DOE responsibility to design and develop the LSS. The LSS is an electronic information management system that will contain the relevant licensing documents of DOE, NRC, and other parties to the Commission's high-level waste repository licensing proceeding. NRC would then operate and maintain the system. The two agencies are currently involved in a joint study to find the most cost-effective way to develop and operate the LSS. Both agencies' responsibilities under the LSS rule could be affected by this study. Therefore, NRC's LSS budget is being held relatively constant pending the outcome of this work with attention being focused on allied programmatic activities. Under any circumstances, large resource increases will not be needed in FY 1993.

During FY 1992-1993, staff support will be provided to the Licensing Support System Advisory Review Panel and the consensus advice of the panel will be implemented. Through the advisory review panel, LSS participants play an active role in resolving the many detailed issues that still exist with regard to system requirements definition, procurement, design, development, and operation. The LSS Administrator has a leadership role in the resolution of these issues to see that they are being properly addressed and resolved on a schedule consistent with system design, development, and implementation objectives and to keep LSS participants fully informed of significant LSS developments.

During FY 1992-1993, the LSS Administrator will serve as a focal point for providing information to LSS participants, other government agencies, and the public on LSS activities, responsibilities, and schedules.

During FY 1992-1993, more detailed program management planning will be performed. The automated project management software data base that maintains information on schedules, activities, and resources pertaining to the acquisition, development, and operation of the LSS will be updated and expanded.

During FY 1992, an LSS-participant compliance evaluation program, which will include criteria for evaluating compliance and a schedule for compliance evaluation, will be developed. During FY 1993, participants' compliance plans

## High-Level Nuclear Waste Regulation

---

will be reviewed and approved and audits of the compliance of LSS participants with the requirements of the LSS rule will be performed.

During FY 1992-1993, a broad range of document management related standards, guidance, and procedures for the LSS will be developed. This will include standards and guidance related to participant identification, preparation and submittal of documents to the LSS, cataloging and indexing criteria, authority tables, thesaurus update and maintenance, document segmentation standards, controlling access to the LSS, the handling of privileged material, and the capture and access of graphic-oriented material and the treatment of material not suitable for electronic capture. In addition, procedures will be developed to coordinate with NRC's hearing boards and panels, offices that coordinate Freedom of Information Act requests, DOE and NRC public document rooms, local public document rooms, NRC's Office of the Secretary on docket file matters, and various other organizations relative to their planning for document-related management activities.

During FY 1992, a methodology will be developed for creating a prioritized document production schedule for loading the LSS data base with the most important documents during the early stages of access to the system. During FY 1992-1993, requirements will be defined for the operation and maintenance of the LSS to include training and other user support services.

**SPECIAL AND INDEPENDENT REVIEWS,  
INVESTIGATIONS, AND ENFORCEMENT**



SPECIAL AND INDEPENDENT REVIEWS, INVESTIGATIONS, AND ENFORCEMENT

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate .....\$33,847

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Salaries and Benefits	\$17,471	\$18,519	\$19,542	\$1,023
Program Support	10,918	12,385	12,380	-5
Administrative Support	887	800	800	0
Travel	<u>1,298</u>	<u>1,100</u>	<u>1,125</u>	<u>25</u>
Total	\$30,574	\$32,804	\$33,847	\$1,043
(Staff)	(254)	(254)	(254)	(0)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From FY 1992</u>
Maintain Current Services	
Personnel Compensation	\$1,023
Administrative Price Increases	<u>20</u>
Total	\$1,043

Maintain Current Services

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; the 4.0-percent pay increase for law enforcement positions scheduled for CY 1992 and CY 1993 which is in addition to the above pay increase; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System. The administrative price increases reflect increased costs of transportation and per diem.

Program Requirements

There are no significant resource changes due to program requirements.

Special and Independent Reviews, Investigations, and Enforcement

DESCRIPTION OF PROGRAM

The Special and Independent Reviews, Investigations, and Enforcement Program covers evaluations of safety concerns involving reactor and nonreactor facilities, assessments of operational events and experience, technical training for NRC staff, review and advice to the Commission on reactor safety and waste management issues, adjudicatory reviews, investigations of wrongdoing by NRC licensees, and enforcement policy and actions in furtherance of the protection of the public health and safety. This program comprises the following six program elements: Special Safety Reviews, Operational Experience Evaluation, Independent Safety Reviews and Advice, Independent Adjudicatory Reviews, External Investigations, and Enforcement.

The program and administrative support funds and staff for each of the six Special and Independent Reviews, Investigations, and Enforcement program elements are shown below. The program support funds are allocated for work done by Department of Energy (DOE) contractors and commercial contractors for the NRC. The administrative support funds are allocated for NRC's Technical Training Center in Chattanooga, Tennessee. The narrative that follows describes these program elements, gives the reasons why the resources are needed, and explains significant resource changes from FY 1992.

Program Element	FY 1991		FY 1992		FY 1993 Estimate				
	Enacted		Estimate		Request		Change From		
	Funds	Staff	Funds	Staff	Funds	Staff	FY 1992	Funds	Staff
Special Safety Reviews	\$6,270	79	\$6,910	81	\$6,905	81	-\$5	0	
Operational Experience Evaluation	4,685	47	5,250	47	5,250	47	0	0	
Independent Safety Reviews and Advice	220	34	330	34	330	34	0	0	
Independent Adjudicatory Reviews	595	31	675	27	675	27	0	0	
External Investigations	15	44	0	45	0	45	0	0	
Enforcement	20	19	20	20	20	20	0	0	
<b>Total</b>	<b>\$11,805</b>	<b>254</b>	<b>\$13,185</b>	<b>254</b>	<b>\$13,180</b>	<b>254</b>	<b>-\$5</b>	<b>0</b>	

SPECIAL SAFETY REVIEWS

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$6,270 (79)	\$6,910 (81)	\$6,905 (81)	-\$5 (0)

This program element is conducted to identify, evaluate, and respond to potentially significant events and safety concerns involving U.S. commercial nuclear power reactors and nonreactor facilities, based on events reported to the NRC by its licensees. This program element also provides support for the agency's Committee to Review Generic Requirements. The committee's activities include review of generic requirements and backfit considerations. This program element comprises four major activities: (1) Diagnostic Evaluations, (2) Incident Investigation, (3) NRC Incident Response, and (4) the Technical Training Center.

1. DIAGNOSTIC EVALUATIONS

Diagnostic evaluations supplement the Systematic Assessment of Licensee Performance Program, performance indicators, and other assessment data in evaluating specific utility programs to enable NRC senior management to make more informed assessments concerning overall nuclear power plant performance. These assessments assist the NRC in taking appropriate regulatory actions.

Approximately four diagnostic evaluations of individual nuclear power plants are expected to be conducted during each year of FY 1992-1993, as determined by the Executive Director for Operations. Each evaluation will consist of a formal, independent, indepth assessment conducted by an NRC team for the purpose of providing expert insight into significant aspects of plant operations, plant performance, and safety, with emphasis on root-cause determinations of performance problems. In addition, the status and closeout of generic diagnostic evaluation team-initiated staff actions, assigned by the Executive Director for Operations, are then tracked and documented.

2. INCIDENT INVESTIGATION

This activity is carried out by the Office for Analysis and Evaluation of Operational Data to oversee the agency's Incident Investigation Program to ensure that particularly significant operational events, involving nuclear power reactors and other facilities licensed by the NRC, are investigated in a systematic and technically sound manner and that information is obtained on the

## Special and Independent Reviews, Investigations, and Enforcement

causes of the events, including those involving NRC activities, so that the NRC can take corrective actions that are timely and effective. For events that could be of major significance, an incident investigation team is established independent of the region and the program office. For investigation of less significant operational events, an augmented inspection team is established, under regional direction complemented by headquarters personnel, as necessary. The staff will continue to participate on incident investigation teams and augmented inspection teams, as necessary, during FY 1992-1993.

### 3. NRC INCIDENT RESPONSE

This activity is conducted to ensure that the NRC is prepared to carry out its role in a radiological emergency at an NRC-licensed nuclear facility, that the licensee's response is consistent with its responsibilities, and that the NRC response is coordinated with other Federal response activities. The NRC's responsibilities in this area are to: (1) manage the NRC Operations Center; (2) develop, maintain, and integrate agency-wide response plans, procedures, and training of personnel and organizations; (3) conduct exercises to achieve and test readiness objectives; (4) provide operational support and contract management for agency response activities; (5) evaluate and assess headquarters and regional response capabilities; and (6) provide continuous-shift staffing of the NRC's Operations Center with qualified systems engineers. These engineers receive NRC licensee event reports, as well as other information, and perform preliminary evaluations to determine which events warrant prompt agency response and notification (to the offices of Nuclear Reactor Regulation and Nuclear Material Safety and Safeguards, the regions, senior management, and other Federal agencies) and then make that notification.

The NRC will maintain continuous coverage (24 hours a day, every day) of the NRC Operations Center for communication with licensed nuclear power plants and certain fuel cycle facilities to receive reports of, and to deal with, significant events at these facilities. Operations Center emergency plans and procedures for power reactors and fuel cycle facilities, computers, and other equipment will continue to be maintained to provide the capability for agency analysis of events and response to incidents. Analytical and consequence-assessment tools and procedures necessary for reactor, fuel cycle and material safety evaluations, consequence projections, protective measures evaluations, airborne monitoring following a release, and information management will continue to be developed and refined as needed during FY 1992-1993. The NRC coordinates with State and Federal agencies to ensure an integrated response to events. The NRC will upgrade the NRC Operations Center Emergency Telecommunications System.

As one of the key Operations Center capabilities, the Emergency Response Data System will provide for licensee-activated, automatic transmission of preselected power plant data from the licensee's emergency response facilities to a computer at the NRC Operations Center and other remote locations. This system is essential for improving the NRC's ability to effectively carry out its role of advising the licensee and offsite officials of actions to protect the public's

## Special and Independent Reviews, Investigations, and Enforcement

health and safety during a radiological emergency. The Emergency Response Data System will provide the NRC with a timely, reliable set of key parameters on which to base such advice or recommendations. Currently, 22 reactors are connected to the system. A new rule, which became effective in August 1991, requires the Emergency Response Data System to be implemented at all reactors by February 1993. During each year of FY 1992-1993, approximately 50 reactors are expected to be connected to the system until completion in FY 1993.

The NRC will continue to participate in the U.S. Government's Continuity of Government Program during FY 1992-1993. Guidance and training will be provided to the staff in implementing the NRC role and functions in a national emergency.

A standardized training program on the technical and organizational aspects of emergency response has been developed and continues to evolve. This training will be conducted during each year of FY 1992-1993 for headquarters and regional response personnel. Training is also offered periodically to the Federal agencies which support the NRC as well as the State agencies that the NRC supports during an accident. A limited number of exercises involving various accident scenarios will be conducted to confirm and maintain the capabilities of NRC response personnel. In addition, response personnel will participate in on-site, full-scale licensee emergency preparedness exercises with the NRC regions, to more fully evaluate the agency's emergency preparedness and incident response programs. A number of limited-scale exercises will also be conducted with emphasis on the interfaces with State organizations. Federal emergency response programs, including monitoring, assessment, and support services, continue to be updated. More efficient notification and information exchange methods continue to be developed among the Federal response agencies.

In an effort to enhance Federal readiness and training, the Federal-Field Exercise 3 will be conducted in FY 1993 at the Susquehanna Nuclear Power Plant as a demonstration of a full Federal emergency response. Resources are allocated in FY 1992-1993 for development of the scenario for the Federal-Field Exercise 3 and for production of documents, such as the exercise plan, evaluation plan, training materials, and final evaluation report.

#### 4. TECHNICAL TRAINING CENTER

This activity provides for the technical training of NRC technical staff, including resident inspectors, headquarters- and region-based inspectors, reactor operator license examiners, Operations Center duty officers, licensing project managers, and technical reviewers. Training is provided on a space available basis for other Federal, State, and foreign government employees. Courses are offered in reactor technology system design and operation and in other specialized technical areas, such as engineering support, safeguards, materials and fuel cycle safety, reactor health physics, and inspection and examination techniques.

The reactor technology curriculum will continue to be conducted to provide appropriate coverage of the General Electric, Westinghouse, Babcock & Wilcox,

## Special and Independent Reviews, Investigations, and Enforcement

and Combustion Engineering reactor vendor designs. The curriculum will continue to include a spectrum of approximately 45 courses ranging in duration from 3 days to 3 weeks. Initial reactor technology training will be provided each year to NRC inspectors, reactor operator license examiners, and other high-priority NRC personnel and refresher training will be provided to NRC inspectors and reactor operator license examiners. Training of headquarters and regional reactor inspectors, operator licensing examiners, and response staff on vendor-specific emergency operating procedures will continue during FY 1992-1993. Major curriculum adjustments to best satisfy the highest priority regional training needs were made in FY 1991 and will continue during FY 1992-1993.

Full-scope reactor simulators, under direct control of the NRC, will be modified during FY 1992-1993 to improve the hardware configuration, thermal hydraulic modeling, simulation capabilities, and graphic displays. Incorporation of high-performance engineering workstation technology into existing and future reactor technology courses will begin in FY 1992. This includes the use of high-fidelity thermal hydraulic codes on classroom engineering workstations to compute and display information that is not available on reactor simulator instrumentation. Development and implementation of a configuration capable of simulating nuclear plant normal, abnormal, and emergency conditions for multiple plant designs will begin in FY 1993.

The specialized-technical training curriculum will continue to be conducted to provide appropriate coverage in specialized areas. This curriculum will continue to include approximately 75 courses ranging in duration from 1 day to 5 weeks. Emphasis will continue to be placed on nuclear materials safety and fuel cycle program development and training. Curriculum modifications will continue to be made in the reactor and nuclear materials/fuel cycle health physics areas through FY 1993. Training in areas such as reactor and nuclear materials health physics, motorized valve actuators, nondestructive examination technology, and safeguards technology, as well as training to support the Incident Investigation Program, will continue through FY 1993.

The NRC will continue development and implementation of entry-level training programs for nuclear engineering specialties, which are designed to bring interns with engineering and scientific degrees into the agency and provide them with the necessary technical training and experience to proceed through existing qualification programs. During FY 1992-1993, the NRC will continue to develop and present training to implement the qualification programs for headquarters technical personnel to address the specific initial, supplemental, and periodic refresher training requirements by job category.

Expansion of both the reactor technology curriculum and the specialized technical training curriculum will continue, in order to meet high-priority needs identified by the headquarters' program offices and the regions. Development of new or revised technical training programs will be coordinated with the program offices and regions.

## Special and Independent Reviews, Investigations, and Enforcement

The NRC Technical Training Center maintains a 2-year integrated schedule of courses that supports long-range planning by agency managers and is flexible enough to respond to changing needs and priorities within the agency. A spectrum of reactor technology training is provided in each of the four U.S. conventional reactor designs to meet agency needs, including an integrated series of classroom and simulator courses for the highest priority NRC staff. Approximately three of these courses series are provided each year for the General Electric and Westinghouse reactor technology designs, and approximately two for the Combustion Engineering and Babcock and Wilcox designs. The Technical Training Center resources also provide for specialized technical training to meet high priority continuing and reactive training needs in such areas as engineering support, health physics, safeguards, and inspection or examination techniques.

The administrative support funds primarily provide for rent, supplies and materials, space alterations, equipment maintenance, some simulator support, graphics, and audiovisual services for NRC's Technical Training Center in Chattanooga, Tennessee.

Special and Independent Reviews, Investigations, and Enforcement

OPERATIONAL EXPERIENCE EVALUATION

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	FY 1993 Estimate	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$4,685 (47)	\$5,250 (47)	\$5,250 (47)	\$0 (0)

This program element is conducted to collect, analyze, and disseminate, information about operational safety data associated with NRC commercial nuclear power reactor licensees and other licensees. Operational experience from NRC licensees, Agreement States, and foreign sources is reviewed to identify either plant-specific or generic safety issues resulting from significant events or situations that warrant detailed evaluation. These issues are further analyzed to assess the root causes of the identified deficiency, the adequacy of corrective actions implemented and planned, and to identify those safety concerns that may warrant regulatory attention. In addition, the trends and patterns of events are analyzed to identify any needs for regulatory attention. This program element comprises three major activities: (1) Operational Data Analysis, (2) Performance Indicators, and (3) Operational Data Collection and Dissemination.

1. OPERATIONAL DATA ANALYSIS

This activity comprises the review of nuclear power reactor licensee event reports, as well as the review of extensive documentation of events, NRC inspection reports, U.S. nuclear power plant industry reports, and foreign reactor reports. In addition, each event reported to the NRC Operations Center by a licensee or regional office is reviewed. Operational events, such as overexposure to radioactive materials and medical misadministrations of nuclear material, are included in this review.

The NRC staff analyzes operational data, including licensee event reports, to identify potentially safety-significant problems that may be plant specific, common to specific types of plants, or have generic implications for other facilities. The NRC will complete the review and analysis of approximately 2,500 reactor licensee event reports during each year of FY 1992-1993. It will also complete the review of approximately 1,500 materials event and inspection reports annually. These reports are associated with the use, transportation, safeguarding, and disposal of nuclear materials. Continued emphasis will be placed on the review of relevant operating experience in foreign power reactors.



## Special and Independent Reviews, Investigations, and Enforcement

Those reactor and other licensee events that are considered to be significant from the standpoint of the public health and safety will be provided to the Commission with recommendations that they be considered as "abnormal occurrences." On a quarterly basis, abnormal occurrences will be reported to the Congress and the public.

The NRC will continue to coordinate safety analysis activities with other organizations, such as the Electric Power Research Institute, the Institute of Nuclear Power Operations, and owners' groups and provide results, as appropriate. Component failure data from the Nuclear Plant Reliability Data System, a data base voluntarily supported by the U.S. nuclear power plant industry and maintained by the Institute of Nuclear Power Operations, will continue to be analyzed to identify component attributes that may signify an unrecognized safety concern.

On the basis of the comprehensive and systematic review of all the reactor licensee event reports, significant operating events are identified and selected for further indepth evaluation. The evaluation assesses the root causes of the identified deficiency, the safety significance and generic implications of the deficiency, and the adequacy of corrective actions. Indepth technical evaluations of components, systems, system interactions, dynamic plant response, and human performance will be performed on the basis of operating events. Recommendations are made to prevent recurrence of those events which have the potential to progress to more safety significant reactor transients. The results, findings, and recommendations for actions based on these evaluations of operating experience are documented in technical study reports, which are widely disseminated to the nuclear industry and the public on a timely basis. The recommendations from these studies are formally tracked and the followup status is periodically reported to the Commission.

The NRC will continue to place emphasis on the investigation of root causes, the contribution of human factors, and the determination of the risk significance of operational events. By emphasizing the underlying causes of significant operating events and the practices that can prevent recurrence, the lessons of experience can be more effectively communicated to the nuclear power plant industry to improve plant safety. Failure data for key components will be analyzed for evidence of inadequate maintenance and possible aging effects. Enhanced analysis methods will be applied to the data review process to improve the timeliness of feedback to the industry. Quantification of the risk significance of events during power operation and reactor shutdown will be enhanced. Action will be initiated, as appropriate, to resolve any associated safety issues and data will be reviewed to assess the effectiveness of previous actions.

### 2. PERFORMANCE INDICATORS

This activity comprises activities aimed at developing and implementing a method of identifying, as early as practicable, those individual nuclear power plants, or groups of plants, whose performance may warrant special (either increased or decreased) regulatory attention. Performance indicators are intended to provide

## Special and Independent Reviews, Investigations, and Enforcement

ready information concerning nuclear power plant performance trends and to assist NRC management in identifying poor and/or declining safety performance, as well as in identifying good and/or improving safety performance.

The NRC's Performance Indicator Program utilizes the following indicators: automatic scrams while the reactor is critical, selected safety-system actuations, significant events, safety-system failures, forced-outage rates, equipment-forced outages per 1,000 critical hours, collective radiation exposure, and cause codes extracted from licensee event reports. Quarterly reports showing trends in performance and comparisons with appropriate industry averages for each licensed nuclear power plant and each individual indicator will continue to be provided to NRC senior management during FY 1992-1993. These reports are disseminated to NRC management, the Commission, and licensees and are available to the public.

The NRC will continue its review, evaluation, and revision, as needed, of the Performance Indicator Program and new indicators of licensee performance. During FY 1992-1993, major changes to the program are expected to occur as new indicators of licensee performance are incorporated, along with new methods of data collection and evaluation. Information obtained from individual plant examinations will be used to assist in the development of risk-based indicators. Development of indicators associated with management, maintenance, and training will continue. A program to detect breakdowns in management activities at fuel cycle and materials facilities using a system of performance evaluation factors will be carried out under the Nuclear Material and Low-Level Waste Safety and Safeguards Regulation Program.

### 3. OPERATIONAL DATA COLLECTION AND DISSEMINATION

This activity comprises the data bases used to retrieve and analyze events for trends and patterns. Activities are designed to detect, through statistical and engineering analysis, trends or patterns that indicate safety concerns; to develop the risk perspective associated with operational experiences; and to make recommendations for corrective actions. The information is also used to determine trends in licensee performance.

Operational experience at all NRC-licensed activities is collected, screened, and analyzed. Operational experience at foreign power reactors is screened and independently analyzed for safety significance and applicability to the U.S. nuclear program. The NRC will continue to provide information on foreign events to U.S. organizations and to report U.S. experience to foreign organizations, through the Nuclear Energy Agency and the International Atomic Energy Agency's incident reporting system and bilateral agreements. Increased attention will be focused on the feedback of operating experience by the NRC, the industry, and each licensee in order to use the lessons of experience to prevent serious nuclear incidents from occurring in the future. The NRC will continue the development of improved methods for providing feedback on operating experience during FY 1992-1993, through such means as increased interaction with reactor owners groups, the highlighting of risk significance, the conduct of workshops,

## Special and Independent Reviews, Investigations, and Enforcement

and coordination with industry regarding industry-originated feedback. Special emphasis will be placed on developing and maintaining direct interfaces with major component vendors for the purpose of sharing equipment performance data.

The NRC will continue to use and upgrade operational and reliability data storage and retrieval systems. Information primarily from two commercial power reactor reporting systems is used for the analysis of trends and patterns. The first system is the Licensee Event Reporting System, which is required by NRC regulation (10 CFR 50.73). The licensee event reports are based on certain events of an established significance level at reactor sites. The data from the licensee event reports are coded and entered into data bases to capture the sequence of events, the failures that occurred, the causes of the events, and corrective actions to avoid similar events in the future. The NRC will continue to review the reporting requirements and agency guidance to identify and implement improvements under 10 CFR 50.73. Using information gained from the 1990 Regulatory Impact Survey and the NRC/industry workshops, starting in FY 1992 and continuing in FY 1993, NRC will issue clarifying guidelines on current event reporting requirements and will examine the need for additional information regarding human factors and reliability of safety systems. Also, the automated data processing capabilities for storage and retrieval of licensee event reports and other operating experience information will continue to be upgraded for effectiveness.

The second reporting system is the Nuclear Plant Reliability Data System (NPRDS) which captures events of lesser significance, specifically individual component failures which meet a safety significance threshold. The staff, on an annual basis, reviews the Nuclear Plant Reliability Data System to assess industry's participation in terms of timeliness, completeness, and quality of reporting. In addition, the staff is discussing with the Institute of Nuclear Power Operations and industry representatives the feasibility of expanding NPRDS to provide more risk-significant operating data.

Both data bases will continue to be analyzed to detect trends in the safety performance of domestic plants and to identify specific issues and corrective actions to improve or maintain safe operations. With more than 100 reactor-years of operation added annually, these data bases will grow and continue to be the primary systems to reveal trends in equipment and personnel performance.

INDEPENDENT SAFETY REVIEWS AND ADVICE

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change from FY 1992</u>
Funds (Staff)	\$220 (34)	\$330 (34)	\$330 (34)	\$0 (0)

This program element provides the Commission with independent reviews of, and advice on, the licensing and operation of production and utilization facilities and related safety issues, as well as the management and disposal of low-level nuclear waste and related matters. Such independent reviews and advice are provided by the (1) Advisory Committee on Reactor Safeguards (ACRS) and (2) the Advisory Committee on Nuclear Waste (ACNW). In order to provide objective reviews and advice affecting these issues, the committees rely on highly qualified members and specialized consultants.

1. ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

The ACRS is responsible for providing advice on: the safe operation of licensed nuclear facilities; adequacy of proposed evolutionary, passive, and advanced reactor designs and related technical policy issues; proposed Electric Power Research Institute requirements for evolutionary and passive nuclear plant designs; proposed safety-related regulations and regulatory policies; the NRC safety research program; and related matters. Upon request of DOE, the ACRS reviews and advises with regard to hazards of DOE nuclear activities and facilities. In addition, upon request, the ACRS provides advice to the Defense Nuclear Facilities Safety Board. The ACRS has statutory responsibilities as described in the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended.

In executing its responsibilities, the ACRS reviews and provides advice on activities such as: issues associated with the issuance of new project licenses and design certifications; the adequacy of proposed evolutionary, passive, and advanced-reactor designs; issues associated with the development and implementation of performance indicators; severe accident policy implementation, including severe accident management; evaluations of reactor operating experience, including special investigation activities of severe reactor incidents; issues associated with the renewal of licenses for existing plants and the effects of plant aging; the use of probabilistic risk assessment in the evaluation of nuclear plants design and performance; individual plant examination

## Special and Independent Reviews, Investigations, and Enforcement

and individual plant examination of external events submittals; maintenance rule implementation matters; and identification, prioritization, resolution, and implementation of generic safety issues.

The ACRS reviews and comments on proposed regulatory guides and safety-related regulations and regulatory policies, including revisions being considered or being promulgated as the basis for NRC regulatory activities. It also reviews and comments on regulatory issues referred to it by the Commission. Specific examples include: programs and regulatory guidance associated with implementation of the safety goals policy, matters related to the application of improved source-term methodology to evolutionary and advanced light-water reactors, and programs associated with containment performance improvement. In addition, the ACRS, on its own initiative, performs reviews of and provides advice on specific generic matters and nuclear facility safety-related items.

### 2. ADVISORY COMMITTEE ON NUCLEAR WASTE

The ACNW provides a focused center of expertise for independent technical review of, and advice on, waste management activities. The ACNW is responsible for reviewing and providing advice on the management of nuclear waste within the purview of NRC responsibilities, as directed by the Commission.

The work of the ACNW discussed in this program pertains to low-level nuclear waste issues. Work in the area of high-level nuclear waste is discussed separately in the High-Level Nuclear Waste Regulation Program. The Committee's activities in the area of low-level nuclear waste primarily focus on activities related to the Low-Level Radioactive Waste Policy Act of 1980, as amended, and include the licensing, operation, and closure of low-level waste disposal sites.

The Committee is also involved with other such activities as the handling, processing, transportation, storage, and safeguarding of radioactive nuclear material; the disposal of radioactive nuclear wastes mixed with other hazardous substances; and addressing the handling of uranium mill tailings.

Specific examples of the work of the ACNW in the area of low-level nuclear waste management include review and advice on the following: proposed rulemakings, regulatory guides and technical positions developed to clarify the intent of 10 CFR Part 61; NRC research programs associated with low-level nuclear waste management and disposal; packaging of low-level waste in high-integrity containers; and proposed criteria for decommissioning. The ACNW will visit solidification process vendors and disposal sites. The ACNW will also be involved in application of 10 CFR Part 72 as it applies to independent spent fuel storage installations located apart from nuclear power plant sites.

INDEPENDENT ADJUDICATORY REVIEWS

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change from FY 1992</u>
Funds	\$595	\$675	\$675	\$0
(Staff)	(31)	(27)	(27)	(0)

Under this program element, hearings are conducted pursuant to a number of statutes including the Administrative Procedure Act, the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969, as amended. Administrative judges hear cases, review records, and issue initial and final decisions in statutory-licensing matters and other Commission-assigned proceedings. The Atomic Safety and Licensing Board Panel (ASLBP) performs these functions.

The Atomic Safety and Licensing Board Panel is the adjudicatory office of the NRC. Administrative judges sitting alone and in three-member boards conduct adjudicatory hearings pursuant to a number of statutes including the Administrative Procedure Act, the Atomic Energy Act of 1954, as amended, and the National Environmental Policy Act of 1969, as amended. The boards hear and decide issues granting, suspending, revoking, or amending licenses to construct and operate nuclear power plants or conduct other licensed activities. Hearings address issues involving health, safety, the environment, and emergency planning. Single administrative law judges are authorized to decide cases on enforcement, civil penalties, and antitrust proceedings. Single presiding officers hear other cases, as directed by the Commission. Issues to be addressed will include antitrust, operating license amendments, enforcement, decommissioning, and certification of new plant designs.

Special and Independent Reviews, Investigations, and Enforcement

EXTERNAL INVESTIGATIONS

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change from FY 1992</u>
Funds (Staff)	\$15 (44)	\$0 (45)	\$0 (45)	\$0 (0)

Under this program element, the NRC investigates allegations of wrongdoing by NRC licensees through its Office of Investigations. All findings and conclusions that result from investigations are sent to the Executive Director for Operations (EDO), so that his staff can review and consider the issues involved and determine whether enforcement action is warranted. The Director, Office of Investigations, will refer suspected or alleged criminal violations concerning NRC licensees and others within NRC's regulatory jurisdiction to the Department of Justice. The Office of Investigations currently has a work load of approximately 70 active cases. Cases meeting the Commission case-opening threshold are expected to range from 50 to 90 cases during each year of FY 1992-1993.

Special and Independent Reviews, Investigations, and Enforcement

ENFORCEMENT

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change from FY 1992</u>
Funds	\$20	\$20	\$20	\$0
(Staff)	(19)	(20)	(20)	(0)

This program element is conducted to ensure compliance with regulations and license conditions, obtain prompt correction in areas of noncompliance, deter further noncompliance, and encourage improvement of licensee performance. The enforcement program uses a series of sanctions that escalate according to the seriousness of the noncompliance and the past history of licensee performance. Notices of violation, civil penalties, and orders are issued, as necessary, to ensure safety and compliance.

Organizationally, the Office of Enforcement is responsible for implementing the enforcement program element with support from the regional offices. Activities include: overseeing and evaluating regional enforcement efforts; coordinating and developing regional enforcement actions and recommendations; evaluating potential enforcement cases; reviewing inspection and investigation reports and confirmatory action letters; initiating and processing notices of violations, civil monetary penalties, and various orders; and developing and promulgating enforcement policy, including preparation and maintenance of an enforcement manual. As the number and types of enforcement actions taken in any period of time are a function of the number of licensees and licensee performance, it is difficult to predict future activity levels. However, on the basis of previous enforcement activity, the NRC expects to consider approximately 200 to 250 enforcement actions during each year of FY 1992-1993.



**NUCLEAR SAFETY MANAGEMENT  
AND SUPPORT**

NUCLEAR SAFETY MANAGEMENT AND SUPPORT

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate ..... \$164,981

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u> <u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Salaries and Benefits	\$53,379	\$57,307	\$62,086	\$4,779
Program Support	2,367	3,300	4,875	1,575
Administrative Support	78,557	87,607	96,690	9,083
Travel	<u>1,420</u>	<u>1,125</u>	<u>1,330</u>	<u>205</u>
Total	\$135,723	\$149,339	\$164,981	\$15,642
Staff	(776)	(786)	(807)	(27)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From</u> <u>FY 1992</u>
<b>Maintain Current Services</b>	
Personnel Compensation	\$3,204
Administrative Price Increases	3,588
Headquarters Consolidation	<u>5,700</u>
Subtotal	\$12,492
<b>Program Requirements</b>	
Financial and Contract Management	\$2,475
Planning and Personnel Management	<u>675</u>
Subtotal	\$3,150
Total	\$15,642

### **Maintain Current Services**

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System.

The administrative price increases result from an increase of about 7 percent in building rent (NRC has no control over increases mandated by the General Services Administration (GSA)), additional costs associated with permanent change-of-station moves, increased transportation and per diem costs, increased cost of Government Printing Office and other printing services, increased Office of Personnel Management charges for security investigations, increased GSA charges for security guards, increased costs for supplies and materials, and higher costs for employee training.

Excavation has recently begun for construction of a second building to consolidate the remainder of the NRC's headquarters staff in Rockville, Maryland. The GSA requires the NRC to pay for certain costs related to the construction and occupancy of the building (e.g., space planning, security systems, interior finishing, systems furniture, and telecommunications networks). Additional funds are required for NRC to pay for these expenses.

### **Program Requirements**

Increases in the areas of financial and contract management are essential to modernize and improve the NRC's financial management tools and practices, through implementation of an integrated accounting system with the Department of the Treasury, and through strengthening the agency's oversight of its appropriated and nonappropriated funds. The increase is also needed for NRC to collect 100-percent of the agency's budget through fees, as required by the Omnibus Budget Reconciliation Act of 1990, and to implement the requirements of the Chief Financial Officers Act. This increase will also provide needed additional contract administration consistent with Office of Federal Procurement Policy direction for improvements in this area.

Increases in the areas of planning and personnel management will help NRC gain a broader perspective on longer range policy issues of relevance to NRC, modernize its ADP planning to meet future information technology requirements, and support several new personnel initiatives such as pay reform, fellowship programs, and other training designed to enhance the recruitment and retention of qualified employees.

## Nuclear Safety Management and Support

---

### DESCRIPTION OF PROGRAM

The Nuclear Safety Management and Support Program encompasses NRC central policy direction, legal advice for the Commission, analysis of long-term policy issues, administrative proceeding review and advice, liaison with outside constituents and other government agencies, financial management, all administrative and logistical support, information resources management, executive management services for the Commission, personnel and training, and matters involving small and disadvantaged businesses and civil rights. This program comprises the following 17 program elements: Commission, Executive Director for Operations, Policy Planning, Consolidation, General Counsel, Commission Appellate Adjudication, Congressional Affairs, Public Affairs, International Programs, State Programs, Controller, Administration, Information Resources Management, Secretariat, Personnel and Training, Small and Disadvantaged Business Utilization and Civil Rights, and Regional Administrative Support.

The program and administrative support funds and staff for each of the 17 Nuclear Safety Management and Support program elements are shown below. The program support and administrative support funds are allocated for services and products obtained from commercial contractors and other Federal agencies such as the GSA and OPM. The narrative that follows describes these program elements, gives the reasons why the resources are needed, and explains significant resource changes from FY 1992.

Nuclear Safety Management and Support

Program Element	FY 1991		FY 1992		FY 1993 Estimate			
	Enacted		Estimate		Request		Change From	
	Funds	Staff	Funds	Staff	Funds	Staff	Funds	Staff
Commission	\$145	42	\$160	42	\$160	42	\$0	0
Executive Director for Operations	140	22	300	22	300	23	0	1
Policy Planning	0	0	0	0	0	5	0	5
Consolidation	700	8	4,825	8	10,525	8	5,700	0
General Counsel	162	100	425	100	375	100	-50	0
Commission Appellate Adjudication	5	10	5	7	5	7	0	0
Congressional Affairs	0	10	5	10	5	10	0	0
Public Affairs	35	16	40	16	40	16	0	0
International Programs	236	25	319	28	249	28	-70	0
State Programs	801	27	946	29	926	29	-20	0
Controller	3,688	86	3,942	93	6,665	102	2,723	9
Administration	23,882	185	25,435	189	26,995	191	1,560	2
Information Resources Management	36,974	132	40,780	135	40,065	137	-715	2
Secretariat	315	28	350	28	350	28	0	0
Personnel and Training	3,926	78	4,125	72	4,625	74	500	2
Small and Disadvan- taged Business Utilization and Civil Rights	75	7	250	7	350	7	100	0
Regions	<u>9,760</u>	<u>0</u>	<u>9,000</u>	<u>0</u>	<u>9,930</u>	<u>0</u>	<u>930</u>	<u>0</u>
Total	\$80,924	776	\$90,907	786	\$101,565	807	\$10,658	21

Nuclear Safety Management and Support

COMMISSION

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$145	\$160	\$160	\$0
(Staff)	(42)	(42)	(42)	(0)

The Commission is the governing body of the Nuclear Regulatory Commission. It is responsible for determining the fundamental policy and for guiding staff offices to ensure that the civilian use of nuclear energy is regulated in a manner consistent with the public health and safety, environmental quality, national security, and antitrust laws.

EXECUTIVE DIRECTOR FOR OPERATIONS

---

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	FY 1993 Estimate <u>Request</u>	Change From <u>FY 1992</u>
Funds	\$140	\$300	\$300	\$0
(Staff)	(22)	(22)	(23)	(1)

---

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

RESOURCE CHANGES

The staff increase of 1 in FY 1993 is to support management and oversight of implementation of the Chief Financial Officers Act of 1990.

Nuclear Safety Management and Support

POLICY PLANNING

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$0	\$0	\$0	\$0
(Staff)	(0)	(0)	(5)	(5)

The Office of Policy Planning will evaluate long-range policy issues of relevance to the NRC. Analyses will be broad in scope, identifying industry and public interest group viewpoints and any other external factors or conditions that the Commission should be aware of in its consideration of the agency's long-range policies and plans.

RESOURCE CHANGES

The staff increase in FY 1993 is to establish the new Office of Policy Planning.



## Nuclear Safety Management and Support

### CONSOLIDATION

	<u>FY 1991 Actual</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds	\$700	\$4,825	\$10,025	\$5,700
(Staff)	(8)	(8)	(8)	(0)

The consolidation program element provides for project planning and coordination, and procurement of goods and services required to consolidate the NRC headquarters staff in Rockville, Maryland. The program is managed by the Office of Consolidation.

### RESOURCE CHANGES

The General Services Administration requires the NRC to pay for certain costs related to the construction and occupancy of the second building. This includes space planning and preparation, security systems, interior finishing, systems furniture, telecommunication networks, and certain equipment and supplies. Additional funds are required for NRC to pay for these expenses.

In April 1988, the first phase of the two-phased consolidation effort was completed when approximately 1,400 employees moved into One White Flint North. The second phase of the consolidation effort will involve moving approximately 1,200 employees into Two White Flint North beginning in CY 1994. On August 7, 1991, the Maryland-National Capital Park and Planning Commission issued its final opinion approving changes to the 1989 White Flint North Preliminary Plan, allowing for construction of the new building. Excavation began in the fall of 1991. When the consolidation effort is complete, NRC headquarters will be housed in two buildings at one location, rather than in the six locations it currently occupies.

Project planning and coordination activities associated with the second phase include: preparing housing plans and office standards; coordinating the activities of building architects, space planners, the General Services Administration, and NRC staff to develop support and special space requirements to accommodate employees; modernizing the telecommunications system; performing procurement planning and managing contracts for demountable walls, systems furniture, local area network cabling, furniture, equipment, and supplies; and scheduling and coordinating the moves of NRC staff to the second building.

GENERAL COUNSEL

	FY 1991 Enacted	FY 1992 Estimate	FY 1993 Estimate	
			Request	Change From FY 1992
Funds (Staff)	\$162 (100)	\$425 (100)	\$375 (100)	-\$50 (0)

The General Counsel is the Commission's chief legal advisor. The Office of the General Counsel (OGC) represents the Commission in courts of appeals proceedings to review Commission orders and rules and, in cooperation with the Department of Justice, represents the Commission in court proceedings affecting the NRC's programs in the Federal district courts and the Supreme Court. The program element is composed of two major activities: (1) Licensing and Regulation and (2) Hearings, Enforcement, and Administration.

1. LICENSING AND REGULATION

The OGC provides legal advice to the Commission on the implementation of employee conduct regulations, external investigations, and internal audits, and on the application of Federal openness laws to Commission functions. The OGC drafts proposed legislation for Commission consideration and advises the Commission on the legal and policy implications of legislation sponsored by others, which is referred to the Commission for comment by OMB or Congress. The OGC provides advice to NRC offices that are developing NRC regulations and guides pertinent to the licensing of nuclear facilities and the use of nuclear materials. The OGC represents the NRC staff in public rulemaking hearings and provides legal assistance to NRC offices involved in issuing licenses for the use or possession of nuclear materials and disposal of nuclear waste.

2. HEARINGS, ENFORCEMENT, AND ADMINISTRATION

The OGC develops legal policy and represents the NRC staff in public hearings conducted in conjunction with the licensing of nuclear facilities and licensing the users of nuclear materials; develops legal policy associated with such licensing; and provides advice and consultation to the staff on health, safety, environmental, and antitrust issues arising from the licensing process.

The OGC provides legal advice and assistance to the Commission, all regional offices, and the Offices of Enforcement, Nuclear Material Safety and Safeguards, and Nuclear Reactor Regulation on inspection and enforcement matters. The OGC also advises and represents NRC offices in enforcement proceedings against

## Nuclear Safety Management and Support

---

licensees involving imposition of civil penalties and the modification, suspension, or revocation of licenses.

The OGC also provides advice and assistance to NRC offices involved in interagency and international agreements, procurement, intellectual property, budget, security, and administrative functions, and represents the NRC in administrative hearings involving procurement, personnel, personnel security, labor relations, and equal employment opportunity matters. The OGC also provides support to the Office of the Inspector General.

COMMISSION APPELLATE ADJUDICATION

---

	<u>FY 1991<sup>1</sup></u> <u>Enacted</u>	<u>FY 1992</u> <u>Estimate</u>	<u>FY 1993 Estimate</u> <u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Funds	\$5	\$5	\$5	\$0
(Staff)	(10)	(7)	(7)	(0)

---

The Commission abolished the Atomic Safety and Licensing Appeal Panel (ASLAP) effective July 1, 1991, and decided that it would conduct direct reviews of licensing board decisions. To assist in its disposition of appeals, the Commission established the Office of Commission Appellate Adjudication.

The Office of Commission Appellate Adjudication reviews administrative proceedings and keeps the Commission advised of decisions that must be made. The office consults directly with the Commission, advising it in formulating opinions and on the discretionary exercise of its supervisory authority over agency adjudication. The office monitors cases pending before licensing boards and associated matters, provides analyses and options to the Commission, and drafts appellate adjudicatory decisions, if necessary.

---

<sup>1</sup>FY 1991 resources shown in the above chart were for ASLAP.

Nuclear Safety Management and Support

CONGRESSIONAL AFFAIRS

	<u>FY 1991</u> <u>Enacted</u>	<u>FY 1992</u> <u>Estimate</u>	<u>FY 1993 Estimate</u> <u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Funds	\$0	\$5	\$5	\$0
(Staff)	(10)	(10)	(10)	(0)

This program element is conducted to assist the Chairman, the Commissioners, and senior NRC staff with congressional matters, to coordinate relations between the agency and Congress, and to serve as liaison between the Commission and congressional committees, congressional subcommittees, and individual members of Congress.

The primary objective is to ensure that Congress is kept fully and currently informed about agency activities and that congressional requests and inquiries are responded to in a timely manner. The Office of Congressional Affairs provides the Chairman, the Commissioners, and senior NRC staff with relevant and current information pertaining to major legislative activities likely to affect the agency. Additionally, the Office of Congressional Affairs seeks to ensure that individual members of Congress are kept currently and adequately informed about significant NRC activities that might affect their respective States and districts.

PUBLIC AFFAIRS

---

	<u>FY 1991</u> <u>Enacted</u>	<u>FY 1992</u> <u>Estimate</u>	<u>FY 1993</u> <u>Request</u>	<u>Estimate</u> <u>Change From</u> <u>FY 1992</u>
Funds	\$35	\$40	\$40	\$0
(Staff)	(16)	(16)	(16)	(0)

---

This program element is conducted to assist the Chairman, the Commissioners, and senior NRC staff in the NRC's public affairs program. This includes developing and administering agency policies and procedures for informing the public and the news media of NRC policies, programs, and activities; informing NRC management of media coverage of activities of interest to the agency; working with civic groups and administering a cooperative program with public schools; and advising management on providing information on NRC activities to the news media and general public and on conducting public meetings.

Nuclear Safety Management and Support

INTERNATIONAL PROGRAMS

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds	\$236	\$319	\$249	-\$70
(Staff)	(25)	(28)	(28)	(0)

This program element ensures that NRC has effective relationships with international organizations and foreign governments in order to contribute to the assurance of U.S. nuclear safety, to help meet U.S. national security goals, and to support achievement of other relevant U.S. foreign policy objectives. This element includes developing and administering policy and programmatic recommendations on international issues; administering the Commission's responsibilities in the areas of nuclear nonproliferation, reactor safety, materials safety, international safeguards, waste management, and nuclear exports and imports; facilitating NRC access to foreign nuclear health and safety-related information and NRC technical cooperation with foreign countries and international organizations; and maintaining liaison with the Executive Branch, particularly the Department of State and DOE on international matters. The NRC will complete action on approximately 150 export license applications and on approximately 120 Executive Branch export consultation cases each year during FY 1992-1993. The agency will conduct active cooperative international exchanges in nuclear safety and safeguards during this period with about 25 countries and international organizations, including activities with the Commonwealth of Independent States (the former Soviet Union), Eastern Europe, and countries in the early stages of establishing a nuclear power program that might use U.S. nuclear technology. The NRC's involvement in the international nuclear safeguards area is expected to increase due to events in the Middle East and the dissolution of the Soviet Union. For example, the NRC has received a formal request from Russia to provide assistance in material control and accounting and physical security of nuclear materials.

RESOURCE CHANGES

The International Atomic Energy Agency's Operational Safety Review Team (OSART) missions to NRC-licensed nuclear facilities are held every 2 years. The program support decrease in FY 1993 reflects the fact that no OSART mission will take place in FY 1993.

Nuclear Safety Management and Support

STATE PROGRAMS

	<u>FY 1991</u> <u>Enacted</u>	<u>FY 1992</u> <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Funds	\$881	\$946	\$926	-\$20
(Staff)	(27)	(29)	(29)	(0)

This program element provides for cooperation, training, oversight, technical assistance, and liaison with States, local governments, Indian tribes, and interstate organizations. As a part of these responsibilities, the Office of State Programs maintains frequent contact with the States by administering agreements with the 28 Agreement States; providing guidance and training; making annual visits to perform onsite program reviews for adequacy and compatibility with NRC programs; providing assistance to State and local governments in radiation control; coordinating activities of interest to State, local, and Indian tribal governments with other NRC offices; and actively participating in the Conference of Radiation Control Program Directors, Inc., and the All-Agreement States Annual Meeting. In addition, the Office of State Programs enters into memoranda of understanding with States on various NRC and State activities, monitors State legislation, and informs the Commission and staff of significant State actions affecting nuclear regulation. It also regularly consults and conducts meetings with governor-appointed State Liaison Officers and maintains contact with national organizations such as the National Governors' Association, National Association of Regulatory Utility Commissioners, National Congress of American Indians, and the National Conference of State Legislatures to identify NRC regulatory initiatives affecting States and to keep NRC apprised of these organizational activities that could affect the agency.

This program element also provides for Federal liaison support to increase cooperation and communication between NRC and other Federal agencies on policy matters. The Federal liaison program manager conveys the Chairman's and Commission's viewpoints and policies to Federal agencies and notifies NRC senior management about significant actions by other Federal agencies that may affect NRC actions, plans, and policies.



Nuclear Safety Management and Support

CONTROLLER

	<u>FY 1991</u>	<u>FY 1992</u>	<u>FY 1993 Estimate</u>	
	<u>Enacted</u>	<u>Estimate</u>	<u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Funds (Staff)	\$3,688 (86)	\$3,942 (93)	\$6,665 (102)	\$2,723 (9)

This program element provides for the overall financial management of the agency. This includes responsibility for all budget and accounting activities; providing agency senior management with analyses of policy, program, and resource issues; implementing the Chief Financial Officers Act of 1990 (CFOs Act) (this FY 1993 request includes an increase of \$150,000 for implementing the CFOs Act); coordinating the development of NRC's Five-Year Plan; preparing information required by OMB Circulars and bulletins; preparing budget reports to Congress; managing the agency's administrative control of funds; managing the agency's internal control program; developing authorization and appropriation legislation; developing and administering policies, principles, standards, and procedures for financial and cost accounting; carrying out fiscal functions, including the preparation of financial statements; and administering the NRC's license fee and debt collection program. This program element is managed by the Office of the Controller and comprises two major activities: (1) Budget and Analysis and (2) Accounting and Finance.

RESOURCE CHANGES

The FY 1993 resource increase is needed for increased costs for change-of-station moves for NRC employees. Increases are also required to implement an integrated accounting and reporting system via cross-servicing with the Department of the Treasury, which is needed to meet current Joint Financial Management Improvement Program and OMB requirements, and to proceed with the comprehensive data-entry and office services contract support for accounting, travel and payroll services. Staffing increases are required in FY 1993 to: document the necessary policies, procedures, standards, and training to properly administer the control of appropriated and nonappropriated funds throughout NRC and to strengthen the oversight of the control of those funds; implement the requirements of the CFOs Act which requires an increase of 2 FTE in FY 1993; and implement Public Law 101-508 which requires NRC to collect 100 percent of its budget through fees.

1. BUDGET AND ANALYSIS

This activity provides support to NRC senior management in the financial management of the agency. This includes analyses of policy, program, and resource issues; providing central administration of the NRC five-year planning, budget formulation, and resource management process; developing and maintaining policies, procedures, and operations to formulate and implement the approved NRC budget; developing and administering NRC authorization and appropriation legislation; designing and developing criteria and systems for resource planning and control; overseeing the agency's administrative control of funds; approving and issuing allotments and financial plans; monitoring the financial implementation of the budget and preparing timely performance reports; evaluating financial and programmatic information systems with respect to CFO needs; assisting NRC offices in the use of sound statistical practices; and maintaining liaison with Office of Management and Budget (OMB) and Congressional committees on budget and appropriation related issues. This activity also produces the NRC Information Digest, a reference publication containing a summary of information about NRC, and NRC's regulatory and licensing responsibilities.

2. ACCOUNTING AND FINANCE

This activity provides technical advice and assistance to the NRC management on the interpretation and application of all financial and accounting activities; develops and administers policies, principles and standards, and procedures for financial management, financial and cost accounting, pricing, and financial provisions under NRC contracts; maintains liaison with the General Accounting Office, Treasury and other agencies on accounting matters; administers the license fee and debt collection program in the NRC; evaluates financial and programmatic information systems with respect to CFO needs; and provides payroll, travel, and fiscal services for the NRC.

Through cross-servicing agreements, this activity operates and upgrades the capabilities of an integrated agency financial management information and accounting system. This system allows for integration of all NRC accounting information and will facilitate the implementation of the CFOs Act and associated OMB guidance. This implementation will result in readily auditable agency financial statements.

## Nuclear Safety Management and Support

### ADMINISTRATION

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$23,882 (185)	\$25,435 (189)	\$26,995 (191)	\$1,560 (2)

This program element provides for centralized administrative and logistical support services for headquarters, specifically in the areas of procurement, property management, facilities support, transportation, security, printing, publications services, mail and distribution services, Freedom of Information Act requests, privacy protection, rulemaking support, and local public document rooms, as well as certain support services for the regional offices. This program element is managed by the Office of Administration and comprises three major activities: (1) Contracts and Property Management, (2) Security, and (3) Freedom of Information and Publications Services.

### RESOURCE CHANGES

The funding increase in FY 1993 is allocated primarily for GSA-projected cost increases for rental of space and guard services, printing and reproduction, and for Office of Personnel Management-projected cost increases for security investigations. The staffing increase in FY 1993 will provide for additional contract administration support, consistent with Office of Federal Procurement Policy direction for improvements in this area, including closeout, cost control, and deliverables that provide agreed-upon products that are on schedule and within budget.

#### 1. CONTRACTS AND PROPERTY MANAGEMENT

This activity is conducted to develop and implement agencywide contracting policies and procedures; direct and coordinate contracting activities, including selection, negotiation, administration, and closeout; provide advice and assistance to offices on procurement and property regulations and requirements and methods of meeting program objectives consistent with such requirements; execute and modify contracts, grants, cooperative agreements, and interagency actions; provide oversight of agencywide contract management of Department of Energy laboratory projects; settle claims and terminations; and perform other normal duties of a contracting office as specified in the Federal Acquisition Regulation and the Federal Information Resources Management Regulation.

## Nuclear Safety Management and Support

---

Property management is a major portion of this activity. Rental costs alone account for half the funds requested for the Office of Administration in FY 1993. Other key areas of property management include: space acquisition and utilization, space renovations, building management, property management, supply and warehouse operations, and office and equipment moves. This activity also develops and administers programs for motor vehicle operations, transportation services, conservation, and recycling. More specifically, there are provisions for shuttles and passenger cars, including the rental or lease of motor vehicles from commercial vendors and government motor pools, and for freight and express services.

Facility support includes providing supplies, materials, postage, and equipment, such as consumable supplies, office furniture, office machines and general equipment, draperies and carpeting. Other services under this activity include alterations and supplementary heating, ventilation and air conditioning; parking, automotive maintenance, fuel, and tires; and maintenance of office machines, security equipment, printing and reproduction equipment, graphics equipment, and photography equipment.

### 2. SECURITY

This activity is conducted to administer the agency's overall security program to protect NRI personnel, property, and information. This includes the safeguarding of restricted data and National Security Information documents or material at headquarters, regional offices, contractor, licensee, and other facilities containing such material; approving the security requirements related to the protection of National Security Information and Restricted Data for licensing of uranium enrichment facilities; the safeguarding of sensitive intelligence; the operation of the NRC classified communications systems; the NRC Drug Testing Program; the physical protection of personnel and property at headquarters and other agency locations; the NRC Criminal History Check Program; and the processing and maintaining of initial and continuing security clearances for agency employees, consultants, contractors, licensees, and others.

### 3. FREEDOM OF INFORMATION AND PUBLICATIONS SERVICES

This activity is conducted to develop policies, procedures, and rules for implementing the Freedom of Information Act, Privacy Act, Federal Register Act, and Regulatory Flexibility Act; develop and review amendments to agency regulations and petitions for rulemaking; provide advice and assistance to offices and the public for filing petitions for rulemaking; administer the agency's Management Directives System; and direct and coordinate local public document room activities near all reactor sites and near certain other fuel cycle and waste sites throughout the United States. This activity also provides centralized agencywide publication control and processing, technical writing and editing services, mail and distribution services, and translation services; publishes regulatory and technical reports; provides direction and coordination for agencywide provision of document composition, printing, copy management, photography, and audiovisual and related services; and provides automated reports

Nuclear Safety Management and Support

---

processing and proofreading services agencywide, including electronic communication with the regional offices and contractors.

Nuclear Safety Management and Support

INFORMATION RESOURCES MANAGEMENT

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$36,974 (132)	\$40,780 (135)	\$40,065 (137)	-\$715 (2)

This program element provides for centralized information resources in the areas of computer, telecommunications, and information support services, including: IRM planning and program management, nationwide telecommunications equipment and services, systems development, data administration, office automation, microcomputers, records management and services, library services, document control and management, computer operations, the Information Technology Services Support Center, computer security and graphics. It provides the essential services and technical means for the agency staff to receive, store, retrieve, manipulate, process, and transmit information in support of the agency's health and safety mission. The program element is managed by the Office of Information Resources Management and comprises three major activities: (1) Policy, Planning, and Management Direction; (2) Computer and Telecommunications Services; and (3) Information Support Services.

RESOURCE CHANGES

The staff increase in FY 1993 is to place increased attention on strategic planning for the agency's future information requirements. More specifically, the staff will develop a revised long-range computer strategy to meet the agency's needs for safety and management data, high-performance computer-assisted engineering tools, full-text and image documentation, and electronic communications in a distributed, network environment. This strategy will include projecting the trends in information requirements for agency programs, assessing the impact of new agency programs and projects on future information requirements, and evaluating changes in information technology and its effect on agency planning (i.e., the likely risks and benefits of implementing such technologies and what strategies the agency should use to ensure the benefits and reduce the risks). Funding remains approximately level.

1. POLICY, PLANNING, AND MANAGEMENT DIRECTION

This activity provides for policy, planning, and management direction for telecommunications, automated data processing, and information management functions in support of NRC's mission and objectives.

## Nuclear Safety Management and Support

Information management activities, programs, and systems are reviewed to determine whether they are meeting the NRC's requirements in an efficient and cost-effective manner. Any potential areas in which technology or centralization can be used to improve efficiency and effectiveness are identified for cost savings, cost avoidance, and cost recovery.

### 2. COMPUTER AND TELECOMMUNICATIONS SERVICES

This activity includes the evaluation, support, maintenance, and purchase of telecommunications equipment and services and the development of the system architecture for the agency's telecommunications network. Additionally, this activity includes: maintenance, support, and improvements to existing NRC automated systems; development of shared data bases and new systems; and office automation planning and the purchase, installation, and maintenance of microcomputers, hardware, software, and local area networks.

#### Telecommunications Services

This subactivity provides maintenance and support for telecommunications services for emergency and routine operations of the agency. Specifically, this subactivity supports telecommunications for the NRC Operations Center and the development and implementation of the Emergency Telecommunications System, as well as routine local and long-distance service.

#### Information Systems Development and Maintenance

This subactivity maintains and enhances current computer applications to support staff demands for information on nuclear facilities and safety issues. Applications include computer systems such as the Safety Information Management System, Master Inspection System, and Licensing Management System.

#### Office Automation and Network Development

This subactivity provides office automation capabilities to NRC headquarters staff. During FY 1991-1993, existing word processing systems will be replaced with personal computer-based local area networks. In conjunction with the replacement of the word processing capabilities, the NRC will network existing microcomputers, as required, to provide its staff with access to the shared data environment, as well as to enhance intra-agency communication of information.

### 3. INFORMATION SUPPORT SERVICES

This activity provides for the management of the flow of information related to the agency's regulatory, research, inspection, legal, management, and external relations programs and provides technical support for staff in the use of information technology, including: computer services, library and records management services, document and drawing management, graphics services, scientific code dissemination, commercial data base services, and user training and assistance. Additionally, the activity ensures agency compliance with

## Nuclear Safety Management and Support

---

statutory requirements under the Paperwork Reduction Act of 1980, the Federal Records Act, the Federal Information Resources Management Regulation, and the Computer Security Act.

### Information and Records Management Services

This subactivity provides agencywide records and reports management and library services. This includes: provision of archival storage and retrieval of agency documents; acquisition of technical, scientific, and administrative books, periodicals, reference works, and other publications; and provision of access to commercial data bases to support demands for safety and administrative information as required by the Commission and its offices.

### Document Management Services

This subactivity maintains the Nuclear Documents Management System/Repository and the centralized search and retrieval system for licensing, technical, and adjudicatory documentation.

### Information Technology Services

This subactivity provides training, microcomputer user support, and assistance for computer systems and graphics. In addition, it provides access to timesharing facilities such as the National Institutes of Health's Federal Computer Center, the Idaho National Engineering Laboratory, and the Oak Ridge National Laboratory. In addition, this subactivity includes responsibility to oversee participation in the Nuclear Materials Management and Safeguards System, a central data base and information support system for tracking nuclear materials.



Nuclear Safety Management and Support

SECRETARIAT

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$315 (28)	\$350 (28)	\$350 (28)	\$0 (0)

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, including preparation of internal procedures; prepares the Commission's meeting agenda; codifies Commission decisions in memoranda directing staff action and monitors compliance through the automated Commission Tracking System; manages the Staff Paper and COMSECY systems; 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 dockets of the Commission; processes and controls motions, pleadings, and appeals filed with the Commission and individual licensing boards; issues and serves adjudicatory decisions and orders on behalf of the Commission and individual licensing boards; receives and distributes public comments in rulemaking proceedings and maintains the official rulemaking docket; issues proposed and final rules on behalf of the Commission; directs and administers the NRC Historical Program; operates and manages the NRC Public Document Room, and its Bibliographic Retrieval System for providing access to NRC's publicly available documents; integrates office automation initiatives into the Commission's administrative system; and functions as the NRC Federal Advisory Committee Management Officer.

PERSONNEL AND TRAINING

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	FY 1993 Estimate	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$3,926 (78)	\$4,125 (72)	\$4,625 (74)	\$500 (2)

This program element provides for the effective recruitment, organization, utilization, and development of the agency's human resources through an integrated career management system; plans and implements NRC personnel policies, programs, and services; administers agencywide recruitment, staffing, compensation, and position management; provides training, awards and benefits administration, employee health assistance, and counseling services; provides labor relations policy guidance and negotiates the collective bargaining agreement; collects, analyzes, and provides data on NRC's work force, supports agencywide equal employment opportunity and affirmative action programs and activities; and provides administration and guidance for the human resources strategic planning effort. The program element is managed by the Office of Personnel and comprises three major activities: (1) Personnel, (2) Training and Development, and (3) NRC-Wide Support.

RESOURCE CHANGES

The funding increase in FY 1993 will support the Graduate Fellowship Program, the Senior Fellowship Program, NRC's Career Development Initiative, the Dosimetry Program, and the Employee Assistance Program. Staffing increases in FY 1993 will support minority recruitment and career development, human resources strategic planning, and pay reform. The fellowship programs are part of NRC's ongoing efforts to recruit and retain individuals with expertise in the scientific disciplines. The Career Development Initiative is necessary to enhance career development and advancement for minority employees and, thereby, improve the utilization and retention of these employees.

1. PERSONNEL

This activity provides for personnel management and organizational activities including recruitment, staffing, and placement; compensation; position management; employee and executive awards; personnel policy and program development; performance management; Federal labor relations and employee relations services; organization and management analyses; support to the Executive Resources Board and its subgroups, including the Performance Review

## Nuclear Safety Management and Support

---

Board and Recertification Performance Review Board; the occupational health and safety program; the employee health assistance program; and the wellness/fitness, child care, and health care programs. This activity also includes equal employment opportunity programs which encompass minority career development; handicapped employee and upward mobility programs; special recruitment, development, and retention programs, including: cooperative education, intern, graduate fellowship, senior fellowship, visiting fellows, Senior Executive Service sabbatical and candidate development, and Distinguished Engineer and Scientist; and other specialized activities such as the Differing Professional Opinion process. Efforts will continue to establish a child care center and a wellness/fitness center as part of the NRC headquarters consolidation in Rockville, Maryland.

### 2. TRAINING AND DEVELOPMENT

This activity provides for all education and training (other than reactor technology and associated technical training under the purview of the Technical Training Center) for agency headquarters and regional staff. This includes: graduate fellowships; scholastic support of cooperative education program students; retraining of NRC employees; support for the Technical Training Center qualifications training; individual employee, supervisory, management, and executive development; equal employment opportunity and affirmative action; career development counseling; risk analysis; regulatory process; end-user computing; and other internal and external training and development activities to improve employee performance. The activity also provides for organizational development, including management succession activities, team building, and rotational assignments, and for agencywide support for improving training delivery, through the development and application of improved or alternative methods, and increased employee training opportunities utilizing the Individual Learning Center.

### 3. NRC-WIDE SUPPORT

This activity comprises the secretarial and clerical support to meet short-term needs by headquarters offices through the assignment of Central Support Unit staff or acquisition of private sector temporary services. The Office of Personnel manages this function in response to agency requirements.

SMALL AND DISADVANTAGED BUSINESS  
UTILIZATION AND CIVIL RIGHTS

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u>	
			<u>Request</u>	<u>Change From FY 1992</u>
Funds (Staff)	\$75 (7)	\$250 (7)	\$350 (7)	\$100 (0)

This program element provides for identifying small and disadvantaged businesses capable of performing NRC contractual requirements and providing information to such firms interested in NRC programs and contracting procedures. The program element also includes the functions and duties relating to equal employment opportunity and civil rights matters within the NRC, to increase employment of minorities and women in the agency, and assure a climate for improved employee morale by promoting and maintaining counseling activities and supporting advisory committees made up of special emphasis groups. The program element is managed by the Office of Small and Disadvantaged Business Utilization and Civil Rights and comprises three major activities: (1) the Small and Disadvantaged Business Utilization Program, (2) the Civil Rights Program, and (3) the Federal Women's Program.

RESOURCE CHANGES

The funding increase provides additional resources for grants for historically black colleges and universities in accordance with Executive Order No. 12677.

1. SMALL AND DISADVANTAGED BUSINESS UTILIZATION

The Small and Disadvantaged Business Utilization activities are authorized by sections 8 and 15 of the Small Business Investment Act of 1958, as amended. The responsibilities of this activity include: locating and referring small and disadvantaged businesses for procurement awards, negotiating a monetary goals program with the Small Business Administration for awarding NRC contracts to small and disadvantaged businesses and monitoring the results on a quarterly basis, monitoring NRC's procurement list to ensure equitable participation of small and disadvantaged businesses, offering advice and consultation to NRC offices on capabilities of small and disadvantaged business firms, disseminating information to such firms interested in NRC contracting procedures, and assisting historically black colleges and universities to secure grants and contracts from NRC.

2. CIVIL RIGHTS

The civil rights activities are responsive to the Civil Rights Act of 1964, as amended, and are implemented by 29 CFR Part 1613 of the Equal Employment Opportunity (EEO) Commission regulations. The activities include developing, monitoring, and evaluating NRC's Affirmative Action Program; advising and assisting the Office of Personnel on recruitment of minorities and women and EEO training for managers and employees; providing advice to senior management on civil rights and EEO matters; and developing and administering EEO counseling activities and the EEO complaints process. Activities also include supporting special emphasis and employee advisory groups; annually setting goals for hiring and advancement of minorities and women; tracking agency performance on all affirmative action and EEO matters; and addressing any EEO issues resulting from financial assistance provided under section 274 of the Atomic Energy Act of 1954, as amended.

3. FEDERAL WOMEN'S PROGRAM

This activity carries out the objectives of the Federal Women's Program to expand and enhance opportunities for NRC women employees. This includes advising management of any policies and practices that may serve as barriers in the workplace, assisting the Office of Personnel in recruitment actions directed toward women, maintaining communication with women's organizations, and coordinating and supporting the Federal Women's Program Advisory Committee.

Nuclear Safety Management and Support

REGIONAL ADMINISTRATIVE SUPPORT

	FY 1991 <u>Enacted</u>	FY 1992 <u>Estimate</u>	<u>FY 1993 Estimate</u> <u>Request</u>	<u>Change From</u> <u>FY 1992</u>
Funds	\$9,760	\$9,000	\$9,930	\$930

This program element provides administrative and logistical support services for NRC's five regional offices. Prompt, efficient, and dependable administrative services are provided to support the regions' staff in meeting the NRC mission, goals, and objectives. Included in these services are transportation, rental payments, printing and reproduction, security, supplies and materials, postage, telecommunications services, office automation, and other administrative services discussed below.

RESOURCE CHANGES

The funding increase in FY 1993 reflects costs for the anticipated move of Region III to a new location and GSA-projected increases in rent for Region III and Region IV offices.

SUPPORT SERVICES

Transportation - Provides for shuttles and passenger cars, including the rental or lease of motor vehicles from commercial vendors and government motor pools, and for freight and express services.

Printing and Reproduction - Provides for printing, reproduction, and photography services.

Security - Provides for security services to protect NRC personnel, property, and information.

Supplies, Materials, Postage, and Equipment - Provides for consumable supplies and office furniture, filing equipment, office machines, general equipment, draperies, and carpeting.

Telecommunications - Provides for local services at resident sites and regional offices, long-distance services for non-Federal Telecommunications System telephone calls, and for necessary equipment.

## Nuclear Safety Management and Support

---

Automated Systems - Provides for systems development efforts, data entry, maintenance and support, evaluation and implementation of options for replacing existing data/word processing and office automation equipment, as well as the procurement of microcomputer hardware and software.

Other Facility Costs - Covers alterations and supplementary heating, ventilation, and air conditioning; parking, automotive maintenance, fuel, and tires; maintenance of office machines, security equipment, printing and reproduction equipment, graphics equipment, and photography equipment; and graphics and audiovisual services.

**INSPECTOR GENERAL**



INSPECTOR GENERAL

(Dollar amounts in tables represent thousands of dollars. In text, whole dollar amounts are used. Staff numbers represent full-time equivalents (FTEs).)

Total FY 1993 estimate..... \$4,585

	<u>FY 1991 Enacted</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate Request</u>	<u>Change From FY 1992</u>
Salaries and Benefits	\$2,430	\$3,200	\$3,750	\$550
Program Support	220	390	635	245
Administrative Support	860	0	0	0
Travel	<u>170</u>	<u>100</u>	<u>200</u>	<u>100</u>
Total	\$3,680	\$3,690	\$4,585	\$895
(Staff)	(32)	(37)	(41)	(4)

EXPLANATION OF RESOURCE CHANGES

	<u>Change From FY 1992</u>
Maintain Current Services	
Personnel Compensation	\$250
Program Requirements	<u>645</u>
Total	\$895

Maintain Current Services

The increase for personnel compensation reflects the full-year cost of the 4.2-percent pay increase scheduled for CY 1992; the 3.7-percent pay increase expected in CY 1993; the 4.0-percent pay increase for law enforcement positions scheduled for CY 1992 and CY 1993 which is in addition to the above pay increases; within-grade salary increases; and several minor adjustments, such as the increased number of staff entering the Federal Employees Retirement System.

### Program Requirements

The increase includes funding for 4 additional staff, program support and travel. The additional 4 FTEs in FY 1993 are needed to perform additional audits, and to conduct additional investigations and inspections in response to an increasing number of allegations and NRC requests. The program support increase is needed to provide technical services for (1) supporting an increasing number of audits performed on NRC's technical activities which are more complex and diversified than administrative audits, (2) supporting the auditing of the agency's financial statements as required by the Chief Financial Officers Act of 1990 (increase of \$50,000), and (3) supporting the increasing number of investigations and inspections required as a result of the increased number of allegations and agency requests. The travel increase is needed to support additional field work required by the increase in investigations, inspections, and audit work.

### DESCRIPTION OF PROGRAM

This program is conducted to provide the Commission and the Congress with an independent review and appraisal of NRC programs and operations to assure their effectiveness, efficiency, and integrity. Its mission includes keeping the Commission and Congress fully informed about fraud, waste, abuse, and other serious deficiencies in the NRC's programs and operations. The organizational responsibility for this program rests with the Office of the Inspector General (OIG). This statutory office was created when the Inspector General Act of 1978 was amended in 1988. These amendments, along with the Chief Financial Officers Act of 1990, placed significant new responsibilities on the office. These additional responsibilities include: semiannual and other reporting requirements, legislative and regulatory review responsibility, oversight for audits performed by outside organizations, significant administrative authorities, and performing audits of the agency's financial statements.

#### 1. AUDIT PROGRAM

The U.S. Nuclear Regulatory Commission is responsible for protecting the public health and safety during civilian uses of nuclear materials. It accomplishes this objective through regulatory programs. The OIG will audit areas key to the primary mission of the NRC, aimed at preventing and detecting fraud, waste, and mismanagement in these programs and operations. In addition, OIG will perform audits of NRC's financial statements as required by the Chief Financial Officers Act of 1990 (CFOs Act). The OIG will evaluate whether the NRC properly implements the requirements of the CFOs Act. The financial audits will include such items as internal control systems, transaction processing, financial systems, and contracts. The OIG will also conduct internal contract audits as well as provide oversight of independent audits of NRC contracts performed by the Defense Contract Audit Agency and other outside organizations.

2. INVESTIGATIONS AND INSPECTION PROGRAM

The OIG will conduct investigations, inspections, and inquiries, as necessary, to ascertain and verify the facts with regard to the integrity of all NRC programs and operations, and the organizations or individuals funded by the agency. Suspected or alleged criminal violations will be referred to the Department of Justice.

3. PLANNING AND ANALYSIS PROGRAM

The planning and analysis program provides all administrative and operational support for the OIG programs. This includes personnel, security, resource management, budgeting, automated systems coordination, space, property, and telecommunications support and prepares the OIG Semiannual Report to Congress.

**SPECIAL SUPPORTING TABLES**

SPECIAL SUPPORTING TABLES

This section contains the following:

Legislative Program Projections which provides a summary of NRC's budget authority and outlays by appropriation for FY 1991-1997.

A report on consulting services required by 31 U.S.C. 1114(a), which provides resource estimates and a description of the consulting services used by NRC in FY 1991 and planned for FY 1992-1993.

A report on drug testing required by 31 U.S.C. 1105(a), which describes NRC's drug testing activities conducted in accordance with Executive Order 12564.

A report on metrication, required by Public Law 100-418, which describes NRC's actions that have been taken and those planned for FY 1992 to implement the Metric Conversion Act of 1975, as amended.

A report by the Office of the Inspector General, required by 31 U.S.C. 1114(b), on NRC's progress in establishing effective management controls and improving the accuracy and completeness of information provided to the Federal Procurement Data System on contracts for consulting services.

A report by the Office of the Inspector General on NRC's compliance with, and the effectiveness of, Public Law 101-121 on the use of appropriated funds to influence certain Federal contracting and financial transactions.

Special Supporting Tables

LEGISLATIVE PROGRAM PROJECTIONS  
(Dollars are in millions)

FY 1991 FY 1992 FY 1993 FY 1994 FY 1995 FY 1996 FY 1997  
Actual Estimate Estimate Estimate Estimate Estimate Estimate

NRC Appropriation: Salaries and Expenses

Budget Authority	\$461.3	\$508.8	\$545.4	\$545.4	\$545.4	\$545.4	\$545.4
Budget Outlays	\$433.1	\$494.9	\$536.3	\$545.4	\$545.4	\$545.4	\$545.5

NRC Appropriation: Office of the Inspector General

Budget Authority	\$3.6	\$3.7	\$4.6	\$4.6	\$4.6	\$4.6	\$4.6
Budget Outlays	\$3.9	\$3.6	\$4.4	\$4.6	\$4.6	\$4.6	\$4.6

## Special Supporting Tables

CONSULTING SERVICES BY PROGRAM  
(Dollars are in thousands)

<u>Program Area</u>	<u>Type</u>	<u>FY 1991 Actual</u>	<u>FY 1992 Estimate</u>	<u>FY 1993 Estimate</u>
Reactor Safety and Safeguards Regulation	Contractual Services	\$30	\$36	\$36
	Total	\$30	\$36	\$36
Nuclear Safety Research	Advisory Committee Consultants	\$53	\$54	\$54
	Total	\$53	\$54	\$54
Nuclear Material and Low-Level Waste Safety and Safeguards Regulation	Personnel Appointments	24	30	30
	Advisory Committee Consultants	12	24	24
	Total	\$36	\$54	\$54
High-Level Nuclear Waste Regulation	Contractual Services	45	50	55
	Personnel Appointments	24	30	35
	Advisory Committee Consultants	103	112	122
	Total	\$172	\$192	\$212
Special and Independent Reviews, Inves- tigations, and Enforcement	Contractual Services	160	170	180
	Personnel Appointments	138	160	165
	Advisory Committee Consultants	102	110	120
	Total	\$400	\$440	\$465
Nuclear Safety Management and Support	Contractual Services	4	41	41
	Personnel Appointments	47	104	105
	Advisory Committee Consultants	0	42	84
	Total	\$51	\$187	\$230
Total Salaries and Expenses	Contractual Services	239	297	312
	Personnel Appointments	233	324	335
	Advisory Committee Consultants	270	342	404
	Total	\$742	\$963	\$1,051
Inspector General	Contractual Services	0	160	105
	Personnel Appointments	24	33	25
	Total	\$24	\$193	\$130
Total Nuclear Regulatory Commission	Contractual Services	239	457	417
	Personnel Appointments	257	357	360
	Advisory Committee Consultants	270	342	404
	Total	\$766	\$1,156	\$1,181

CONSULTING SERVICES BY PROGRAMS

REACTOR SAFETY AND SAFEGUARDS REGULATION

Consultant services are used to provide technical expertise in: (1) the analysis of financial qualifications of new purchasers of nuclear reactors or new companies formed for operating reactors; (2) the evaluation of operating reactor events; and (3) the review of design criteria, loads, methods of analysis, design specifications and design reports for medical components, equipment, and systems.

NUCLEAR SAFETY RESEARCH

Advisory committee expenses are for the Nuclear Safety Research Review Committee which provides advice to the Director, Office of Nuclear Regulatory Research, on the agency's nuclear safety research programs.

NUCLEAR MATERIAL AND LOW-LEVEL WASTE SAFETY AND SAFEGUARDS REGULATION

Personnel appointment services are used to provide technical advice and assistance to staff on the review of quality assurance aspects for low-level waste disposal facilities and uranium mill tailings disposal sites. Advisory committee expenses are for the Advisory Committee on Medical Uses of Isotopes, which considers medical questions referred to it by the NRC staff, renders expert opinions regarding medical uses of radioisotopes, and provides advice on matters of policy. In addition, personnel appointment services are used to furnish medical advice pertaining to possible radiation effects upon NRC licensees, their employees, or members of the public.

HIGH-LEVEL NUCLEAR WASTE REGULATION

Contractual services and personnel appointments are used to obtain expertise not otherwise available to the Advisory Committee on Nuclear Waste on matters associated with the management of high-level nuclear waste. Advisory committee expenses also include the Licensing Support System Advisory Review Panel, which was established to provide advice to the Licensing Support System Administrator on selected aspects of the design, development, and operation of the Licensing Support System.

SPECIAL AND INDEPENDENT REVIEWS, INVESTIGATIONS, AND ENFORCEMENT

Contractual services and personnel appointments, are used to obtain engineering and scientific advice and expert opinion for the Advisory Committee on Nuclear Waste in areas associated with nuclear waste management. In addition, the services of administrative judges are used to hear and decide cases arising under statutes and regulations.



Special Supporting Tables  
(Consulting Services by Program - Continued)

---

NUCLEAR SAFETY MANAGEMENT AND SUPPORT

Contractual services are used to provide third-party evaluations and recommendations for personnel-related hearings and for expertise in developing the agency's human resources strategic plan. Consultant services are also required to assist with the Soviet Program and with Eastern European countries. Personnel appointments provide the agency primarily with advice and assistance: (1) on the retrieval and maintenance of documents located in the local public document rooms, (2) in performing technical editorial review of licensing documents and in preparing the NRC's Annual Report to the Congress, (3) in reviewing certain security clearance applications, (4) in performing evaluations and proposals related to information collection requirements contained in Title 10 of the Code of Federal Regulations, and (5) on recruitment efforts and planning recruitment strategies to meet projected future agency technical position requirements, as identified in the human resources strategic plan, and (6) on implementation of the Federal employees pay reform.

INSPECTOR GENERAL

Contractual services are used to assist in auditing the agency's financial statements, as well as the OIG administrative manual. Personnel appointments are used to provide expert, assistance on complex and high-priority criminal investigations, and to provide quality assessment on both the investigative and administrative functions of the office

FY 1993 CONGRESSIONAL BUDGET REQUEST  
REPORT ON NRC'S DRUG TESTING ACTIVITIES

NRC's Drug Testing Plan was approved in August 1988 and all components of NRC's drug testing program for employees and applicants remain in place. Drug testing requirements imposed by NRC upon the nuclear industry through regulations are separate from this program and not covered by this report. NRC's program for employees and applicants includes random, applicant, voluntary, follow-up, reasonable suspicion and accident related drug testing. Testing was initiated for non-bargaining unit employees in November 1988 and for bargaining unit employees in December 1990 after an agreement was negotiated with the National Treasury Employees Union.

NRC positions which meet the following criteria are considered testing designated positions and the employees are subject to random testing:

- (1) Regional and Headquarters employees who have unescorted access to vital areas of nuclear plants and Category I fuel facilities;
- (2) Employees who have assigned responsibilities or are on call for Regional or Headquarters incident response centers; and
- (3) Employees with access to sensitive compartmented information and/or foreign intelligence information.

Approximately 1,550 NRC employees are in testing designated positions and subject to random testing. Potential selectees interviewed for positions in these categories are subject to applicant testing.

Approximately one thousand three hundred fifty (1,350) tests of all types were conducted between January 1, 1991 and December 31, 1991. Since each employee subject to random testing has an equal chance of being selected each time, some NRC employees were randomly tested more than once. All testing results have been negative except for two employees who tested positive under random testing. One of these employees is in rehabilitation and the second chose to resign from the agency.

During the past year, the Commission decided to select NRC resident personnel (i.e., inspectors and clerical staff assigned to nuclear power plants) for random testing by site, rather than by individual. The Commission also decided to reduce its frequency of testing from 12 to 10 times per year. Internal quality control reviews were completed during the past year to ensure NRC's program continues to be administered in a fair, confidential and effective manner.

NRC's Drug Testing Program remains firmly based upon the principles and guidance provided through E.O. 12564, Public Law 100-71, Department of Health and Human Services guidelines and Commission decisions.

January 1992

U. S. NUCLEAR REGULATORY COMMISSION  
REPORT ON CONGRESS ON METRICATION

This report is in response to Public Law 100-418, Section 5164 of the Omnibus Trade and Competitiveness Act of 1988, which requires each Federal government agency to report to the Congress on its metrication activities for the preceding year and plans for the coming year.

During FY 1991, the staff of the U. S. Nuclear Regulatory Commission (NRC) continued its commitment to metrication by developing for Commission approval a proposed metrication policy implementing the provisions of the Act. In addition, the Nuclear Regulatory Commission participated in the activities of both the Interagency Council on Metric Policy (ICMP) and the Metrication Operating Committee (MOC).

The NRC's major metrication objectives for FY 1992 will be the Federal Register publication during February of the NRC's proposed metrication policy statement for public comment; issuance of metrication guidance to the staff; establishment of the metric system of measurement in procurements, grants, and other business-related activities to the extent practical; and the continued active participation in the ICMP and the MOC.

Proposed Statement of Policy  
to be published in the Federal Register for public comment

The NRC supports and encourages the use of the metric system of measurement by the licensed nuclear industry. In order to facilitate the use of the metric system by licensees and applicants, beginning September 30, 1992, the NRC will publish all regulatory actions and related documents in dual units. These include new regulations, major amendments to existing regulations, regulatory guides, and NUREG-series documents. The NRC will modify existing documents and procedures as needed to facilitate use of the metric system by licensees and applicants. In addition, the NRC will initiate a program of staff training in the metric system. Further, through its participation on national, international, professional, and industry standards organizations and committees and through its work with other industry organizations and groups, the NRC will encourage and further the use of the metric system in formulating and adopting standards and policies for the licensed nuclear industry. However, should the use of any particular system prove to be detrimental to the public health and safety, the Commission will proscribe, by regulation, order, or other appropriate means, the use of that system. In particular, all event reporting and emergency response communications between licensees, the NRC and State and local authorities will be in the English system of measurement. After 3 years, the Commission will assess the state of metric use by the licensed nuclear industry in the United States to determine whether this policy should be modified. Lastly, the NRC will follow the Federal Acquisition Regulation in executing procurements.



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

December 24, 1991

OFFICE OF THE  
INSPECTOR GENERAL

MEMORANDUM FOR: The Chairman  
Commissioner Rogers  
Commissioner Curtiss  
Commissioner Remick  
Commissioner de Planque

FROM: *Thomas C. Williams*  
David C. Williams  
Inspector General

SUBJECT: OIG EVALUATION OF NRC'S CONTRACTING FOR  
CONSULTING SERVICES

Section 1114(b) of Title 31 of the U.S. Code requires the Inspector General or comparable official of each agency to submit to Congress each year, along with the agency's budget justification, an evaluation of the agency's progress in establishing effective management controls and improving the accuracy and completeness of information provided to the Federal Procurement Data System on contracts for consulting services. This memorandum is intended to fulfill the requirements of Title 31 and will be included in the Nuclear Regulatory Commission's (NRC's) Fiscal year 1993 budget submission.

The Office of the Inspector General (OIG) has completed an audit of NRC's use of consulting services and issued a draft audit report on December 24, 1991. OIG concluded in the report that NRC had established a system of management controls for the approval of contracts for consulting services and reporting them to the Federal Procurement Data System (FPDS). However, NRC's contracting officials interpreted Office of Management and Budget (OMB) guidance very narrowly regarding what contracts met the definition of consulting services and should be reported. Therefore, NRC was not always reporting some contracts to FPDS that we believe should have been reported. During the course of the audit, we found that OMB intends to expand coverage of the types of contracts which should be reported in order to provide for adequate controls for all nonpersonal service contracts, not just those for consulting services.

We also found that guidance for two management controls required for consulting services had not been developed by some NRC program offices for orders placed with the Department of Energy's National Laboratories. This weakness pertained to controls for monitoring and evaluating contractor performance. However, agency's program offices were in the process of developing and implementing procedures to cover these areas. We made a recommendation that these procedures be reviewed and approved by the Division of Contracts and Property Management to ensure consistency throughout the agency.

cc: J. Taylor, EDO  
H. Thompson, EDO  
J. Sniezek, EDO  
S. Chilk, SECY  
W. Parler, OGC  
R. Scroggins, CON  
E. Halman, ADM  
J. Blaha, EDO  
J. Funches, ICC



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

December 27, 1991

OFFICE OF THE  
INSPECTOR GENERAL

MEMORANDUM FOR:

The Chairman  
Commissioner Rogers  
Commissioner Curtiss  
Commissioner Remick  
Commissioner de Planque

FROM:

*David C. Williams*  
David C. Williams  
Inspector General

SUBJECT:

SECTION 319 OF PUBLIC LAW 101-121,  
ANTI-LOBBYING ACT

Public Law 101-121 requires that the Inspector General provide an annual report to Congress regarding the Nuclear Regulatory Commission's (NRC) compliance with, and the effectiveness of, the requirements of the Act.

In order to assess NRC compliance with the Act's provisions, we reviewed a sample of 25 of 109 Fiscal Year 1991 contract actions over \$100,000 to determine if the required certifications and contract clauses were contained within the selected sample, where necessary. As a result of reviewing the applicable files, we noted that 20 percent of the contract actions did not contain the certifications and contract clauses required by the Act. We consider this to be an unacceptably high rate of noncompliance, especially since the results of our 1990 review in this area disclosed no such instances of noncompliance. One possible cause for the problems noted is that the checklist used by Division of Contracts and Property Management (DCPM) personnel to ensure that all required certifications and clauses are included in contract actions did not include reference to those required by the Act.

After we had announced our intention to conduct our audit, we observed that DCPM began performing an internal review of its files to determine if the contract clauses and certifications required by the Act had been properly executed. Via memorandum dated December 19, 1991, the cognizant branch chiefs had instructed their staffs to correct any deficiencies noted. This review was scheduled to be completed by December 20, 1991, with necessary corrective actions to be completed by January 3, 1992.

We find it disturbing and inappropriate that after being notified of an audit that DCPM management would attempt to identify and correct deficiencies prior to their discovery by the Office of the Inspector General.

Finally, the Act requires statistics on the following:

- All alleged violations relating to the NRC's covered Federal actions during the year covered by the report;
- The actions taken by the Chairman in the year covered by the report with respect to those alleged violations and alleged violations in previous years; and
- the amounts of civil penalties imposed by NRC.

There were no alleged violations relating to NRC's covered Federal actions during the year covered by this report; therefore, no action was required by the Chairman. No penalties were imposed by NRC.

This report is to be submitted with NRC's 1992 budget justification.

cc: J. Taylor, EDO  
H. Thompson, EDO  
J. Sniezek, EDO  
S. Chilk, SECY  
W. Parler, OGC  
H. Denton, GPA  
P. Norry, ADM  
R. Scroggins, OC  
J. Funches, ICC  
Financial Management Division, OMB

**BIBLIOGRAPHIC DATA SHEET**

SEE INSTRUCTIONS ON THE REVERSE

NUREG-1100, Volume 8

2. TITLE AND SUBTITLE

Budget Estimates  
Fiscal Year 1993

3. LEAVE BLANK

4. DATE REPORT COMPLETED

MONTH | YEAR

January | 1992

5. DATE REPORT ISSUED

MONTH | YEAR

January | 1992

5. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

Division of Budget and Analysis  
Office of the Controller  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

8. PROJECT/TASK WORK UNIT NUMBER

9. PIN OR GRANT NUMBER

10. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

Division of Budget and Analysis  
Office of the Controller  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

11a. TYPE OF REPORT

FY 1993 Congressional  
Budget Submission

b. PERIOD COVERED (Inclusive Dates)

10/1/92 - 9/30/93

12. SUPPLEMENTARY NOTES

13. ABSTRACT (200 words or less)

This report contains the fiscal year budget justification to Congress. The budget provides estimates for salaries and expenses and for the Office of the Inspector General for fiscal year 1993.

14. DOCUMENT ANALYSIS - KEY WORDS/DESCRIPTORS

Budget  
Congressional Budget Submittal  
Fiscal Year 1993

15. IDENTIFIERS/OPEN ENDED TERMS

16. AVAILABILITY STATEMENT

Unlimited

18. SECURITY CLASSIFICATION

(This page)

Unclassified

(This report)

Unclassified

17. NUMBER OF PAGES

19. PRICE



THIS DOCUMENT WAS PRINTED USING RECYCLED PAPER

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

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

- 1 Summary
- 2 Reactor Safety and Safeguards Regulation
- 3 Nuclear Safety Research
- 4 Nuclear Material and Low-Level Waste Safety and Safeguards Regulation
- 5 High-Level Nuclear Waste Regulation
- 6 Special and Independent Reviews, Investigations, and Enforcement
- 7 Nuclear Safety Management and Support
- 8 Inspector General
- 9 Special Supporting Tables

100555100001 1 12  
US NRC-040M PUBLICATIONS SVCS  
DIV FOIA & PUBLIC AFFS  
TFS-PDR-WHPPS  
R-223  
WASHINGTON

FIRST CLASS MAIL  
POSTAGE & FEES PAID  
USNRC  
PERMIT NO. 687