NUREG--0953

DE83 901310

MASTER

NUREG-0953

BUDGET ESTIMATES FISCAL YEAR 1984/85

Appropriation: Salaries and Expenses

January 1983

U.S. Nuclear Regulatory Commission

BUDGET ESTIMATES FOR

U. S. NUCLEAR REGULATORY COMMISSION

FISCAL YEAR 1984-1985

INDEX

General Statement ..... Pages 1 - 12

Nuclear Reactor Regulation (NRR) ..... Pages 13 - 24

Inspection and Enforcement (I&E) ..... Pages 25 - 38

Nuclear Material Safety and Safeguards (NMSS) ..... Pages 39 - 55

Nuclear Regulatory Research (RES) ..... Pages 56 - 74

Program Technical Support (PTS) ..... Pages 75 - 78

Program Direction and Administration (PDA) ..... Pages 79 - 82

Special Supporting Tables ..... Pages 83 - 87

U. S. NUCLEAR REGULATORY COMMISSION

FY 1984 Budget Estimates
GENERAL STATEMENT FOR SALARIES AND EXPENSES

(Dollars in thousands, except whole dollars in narrative material;
People in full-time equivalent)

Estimates of Appropriation

The budget estimates for Salaries and Expenses for FY 1984 provide for obligations of $466,800,000 to be funded in total by a new appropriation.

Estimates of Obligations and Outlays

This section provides for the summary of obligations by program on page 2; the summary of financing these obligations on page 3; the analysis of outlays on page 4; obligations by function on page 5; the proposed appropriation language and analysis of the appropriation language on pages 6 through 9, the general program statement on pages 10 through 12, and the narrative summary of NRC programs beginning on page 13.

The summaries which address obligations include the NRC's Reimbursable program. It should be noted that the obligations related to this program are not financed by NRC's appropriated funds, but solely through reimbursable agreements with other Federal agencies.

The NRC will deposit revenues derived from the licensee fee program and indemnification fees to Miscellaneous Receipts of the Treasury.

The Summary of Obligations by Program table summarizes the total obligations for NRC's Direct and Reimbursable Programs for FY 1982, FY 1983, FY 1984 and FY 1985. The detailed justifications for direct program activities are presented in the same order as they appear in this summary table.

Staffing

Staffing figures are in Full-Time Equivalents and include both Full-Time Permanent and Other Than Full-Time Permanent people.

Equipment

Programmatic equipment funding is included within Program Support funding.

U. S. NUCLEAR REGULATORY COMMISSION

SUMMARY OF OBLIGATIONS BY PROGRAM

(Dollars in thousands, except whole dollars in narrative material;
People in full-time equivalent)

Obligations by Activity:
Direct Program

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Nuclear Reactor Regulation	$ 87,543	$ 94,380	$ 91,490	$ 87,140
Inspection and Enforcement	59,544	69,280	70,910	74,770
Nuclear Material Safety and Safeguards	37,347	35,650	36,280	35,710
Nuclear Regulatory Research	220,287	209,500	199,740	193,290
Program Technical Support	24,205	27,050	27,520	27,470
Program Direction & Administration	37,551	39,410	40,860	41,620
Total Obligations - Direct Program	$466,477	$475,270	$466,800	$460,000
Reimbursable Program	87	500	500	500
Total Obligations	$466,564	$475,770	$467,300	$460,500
Offsetting collections from Federal funds	21	-500	-500	-500
Recovery of prior year obligations	-4,081			
Unobligated balance, start of year	-6,100	-9,296		
Unobligated balance, end of year	9,296			
Budget Authority	$465,700	$465,974 [1/]	$466,800	$460,000

1/ Includes $3,470,000 for the proposed FY 1983 pay raise supplemental.

(Dollars in thousands, except whole dollars in narrative material;
People in full-time equivalent)

Financing of Obligations

The financing of the estimated total obligations of $466,800,000 proposed in the budget estimate for FY 1984 is summarized in the following table:

SUMMARY OF FINANCING

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Sources of Funds Available for Obligations:				
Recovery of prior year obligations...	$ 4,081	$ 0	$ 0	$ 0
Unobligated balance, start of year...	6,100	9,296	0	0
Appropriated to NRC.....	465,700	465,974	466,800	460,000
Offsetting collections from: Federal funds	-21	500	500	500
Total Funds Available for Obligations:	$475,860	$475,770	$467,300	$460,500
Less: Unobligated balance, end of year.....	-9,296	0	0	0
Total Obligations.....	$466,564	$475,770	$467,300	$460,500

1/ Includes $3,470,000 for the proposed FY 1983 pay raise supplemental.

Outlays for Salaries and Expenses

Outlays for FY 1984 are estimated at $466,930,000. The following analysis identifies funds available for outlays for each of the budget periods. This amount less the unexpended balance at the end of the period equals the outlays.

OUTLAY ANALYSIS

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Unexpended balance, beginning of year:				
Obligated	$185,402	$206,004	$214,974	$214,844
Unobligated	6,100	9,296	0	0
Appropriation to NRC	465,700	465,974[1/]	466,800	460,000
Total Funds Available for Outlays	$657,202	$681,274	$681,774	$674,844
Unexpended balance, end of year:				
Obligated	-206,004	-214,974	-214,844	-207,844
Unobligated	-9,296	0	0	0
Total Outlays	$441,902	$466,300	$466,930	$467,000

1/ Includes $3,470,000 for the proposed FY 1983 pay raise supplemental.

(Dollars in thousands, except whole dollars in narrative material;
People in full-time equivalent)

SUMMARY OF BUDGET

OBLIGATIONS BY FUNCTION

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Direct Program				
Salaries and Benefits	$139,019	$149,200	$145,800	$143,900
Program Support	278,391	269,900	259,500	252,020
Administrative Support	40,563	46,490	50,950	53,530
Travel	8,504	9,680	10,550	10,550
Total Obligations - Direct Program	$466,477	$475,270 [1/]	$466,800	$460,000
Reimbursable Program	87	500	500	500
TOTAL OBLIGATIONS	$466,564	$475,770	$467,300	$460,500

1/ Includes $3,470,000 for the proposed FY 1983 pay raise supplemental.

U. S. NUCLEAR REGULATORY COMMISSION

PROPOSED LANGUAGE - SALARIES AND EXPENSES

(Dollars in Thousands, except whole dollars in narrative material;
People in full-time equivalent)

The proposed language 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, as amended, including the employment of aliens; services authorized by 5 U.S.C. 3109; publication and dissemination of atomic information; purchase, repairs, and cleaning of uniforms; official representation expenses (not to exceed $3,000); reimbursement to the General Services Administration for security guard services; hire of passenger motor vehicles and aircraft; $466,800,000, to remain available until expended: Provided, That from this appropriation, transfer 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 and the material access authorization program may be retained and used for salaries and expenses associated with those programs, notwithstanding the provisions of 31 U.S.C. 484, and shall remain available until expended.

U. S. NUCLEAR REGULATORY COMMISSION
Analysis of Proposed FY 1984 Appropriation Language

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, as amended:

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

   42 U.S.C. 5841 et. seq. the Energy Reorganization Act of 1974, established the Nuclear Regulatory Commission to perform all the licensing and related regulatory functions of the Atomic Safety and Licensing Board Panel, the Atomic Safety and Licensing Appeal Board, and the Advisory Committee on Reactor Safeguards, and to carry out the performance of other functions including research, for the purpose of confirmatory assessment related to licensing and other regulation, other activities, including research related to nuclear material safety and regulation under the provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et. seq.) and the Energy Reorganization Act of 1974, as amended (42 U.S.C. 5801 et. seq.).

2. Employment of aliens;

   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.

3. Services authorized by 5 U.S.C. 3109;

   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. 2161b

   42 U.S.C. 2161b directs the Commission that they shall be guided by the principle that the dissemination of scientific and technical information relating 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 an 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.

Analysis of Proposed Language - continued

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 therefore. Congress has appropriated funds for official representation expenses to the NRC and NRC's predecessor AEC each year since FY 1950.

7. Reimbursement of 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 GSA for carrying out the function of protecting public buildings and property, and therefore, NRC appropriations not specifically made available therefore may not be used to reimburse GSA for security guard services.

8. Hire of passenger motor vehicles and aircraft;

31 U.S.C. 638a

31 U.S.C. 638a provides in part - "(a) 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. 718

31 U.S.C. 718 provides in part that no specific or indefinite appropriation shall be construed to be available continuously without reference to a fiscal year unless it is made in terms expressly providing that it shall continue to be available beyond the fiscal year for which the appropriation Act in which it is contained makes provision.

10. 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;

64 Stat 765, Sec. 1210

64 Stat 765, Sec. 1210 prohibits the transfer of appropriated funds from one account to another or working fund except as authorized by laws.

Analysis of Proposed Language - continued

11. Moneys received by the Commission for the cooperative nuclear safety research programs and the material access authorization program may be retained and used for salaries and expenses associated with those programs, and shall remain available until expended.

26 Comp. Gen. 43

2 Comp. Gen. 775

Appropriated funds may not be augmented with funds from other sources unless specifically authorized by law. Funds are received from foreign governments which in turn will participate in NRC's reactor safety research experiments. These funds will be used to pay for any costs incidental to their participation. Funds are received in the form of fees from licensees for the cost of security investigations associated with access to formula quantities of special nuclear material (SNM). These funds will be used to pay the agency performing the security investigations.

U. S. NUCLEAR REGULATORY COMMISSION

Program Statement

The NRC budget request for FY 1984 is $466.8 million. It reflects a decrease in the NRC programs compared to FY 1983, primarily in Nuclear Regulatory Research programs and, to a lesser extent, in the Nuclear Reactor Regulation programs.

With the resources provided by this budget, NRC will, as its first priority, continue to place emphasis on operating reactor safety in FY 1984. The resolution of reactor safety issues will continue to be pursued and implemented promptly on the basis of careful analysis of the costs and benefits of the solutions. The Systematic Evaluation Program (SEP) will examine additional operating reactors to see how they compare to current safety criteria. This effort will be coordinated with the National Reliability Evaluation Program (NREP), which applies probabilistic techniques to assess the safety of operating reactors. NRC will further strengthen its operating reactor safety analysis program. Efforts to collect, analyze, disseminate, and act upon operational data relevant to the safe operation of major licensed facilities must continue to receive priority attention, without hindering plant operation or becoming a hazard. The NRC will continue to operate and improve, as needed, a Licensee Event Reporting (LER) system. The NRC will also develop a more diversified data-gathering system--possibly as suggested by the Brookhaven and other studies --that will help do the more comprehensive statistical analyses contemplated by the Analysis and Evaluation of Operating Data charter.

NRC will maintain the resident inspector program so that all sites with operating reactors will have at least one resident inspector; all sites with a reactor under active construction that is at least 15 percent complete will also have a construction resident inspector.

To bring the regulators closer to licensees and the public most effected by licensed facilities, the NRC will continue to transfer certain licensing and enforcement functions to its regional offices. Significant activities being decentralized include reactor operator licensing, materials licensing, authority to approve reactor licensing actions, and issuance of orders and civil penalties.

The budget provides resources for the continuation of existing power reactor licensing activity in FY 1984 commensurate with caseload projections. Resources are also included for the licensing of the Clinch River Breeder Reactor according to the schedule outlined by the Administration.

The complexity and extent of problems that have been identified in the past few years at several of the nuclear power plants now under construction have caused concern about the quality of the design and construction of nuclear projects. In response to these concerns, the NRC is strengthening its Quality Assurance program and working with industry to resolve specific problems and to ensure that utility top management places a high priority on quality construction of nuclear power plants.

Program Statement - continued

NRC will maintain a vigorous enforcement program with an objective of making non-compliance more expensive than compliance.

The focus of regulatory research will be directed toward obtaining a better understanding of: (1) severe accident phenomena, (2) human-machine interface, including equipment display requirements and models estimating human maintenance errors and (3) the application of probabilistic risk assessment. Additional research will continue on the prevention and mitigation of small break loss-of-coolant accidents such as that which occurred at Three Mile Island. Although the budget request contains no funding for the Loss-of-Fluid Test (LOFT) facility, NRC will participate in the international LOFT project established in FY 1983 and will be represented on the project's management board.

This budget request incorporates the benefits of NRC's efforts to use the resources of other government agencies and the private sector to eliminate overlap and unnecessary expenditure of funds. Such efforts include (a) an agreement with the Federal Emergency Management Agency concerning the allocation of emergency preparedness planning responsibilities, (b) a close working relationship with the Department of Energy (DOE) to utilize applicable data developed in DOE Programs, and (c) development of a program for support and utilization of private sector initiatives such as inspection and evaluation reports by the Institute of Nuclear Power Operations, and American Society of Mechanical Engineers.

Since the cleanup of the TMI-2 reactor is one of NRC's highest safety priorities, we will continue to closely monitor the implementation of the NRC/DOE agreement on the removal of high specific activity wastes for research and development. NRC will also continue to make use of DOE research and evaluation of potential sites for the construction of high-level waste repositories and research done by DOE in the area of breeder technology, focussing on areas applicable to the Clinch River Breeder Reactor licensing effort.

Among the efficiency efforts that are internal to the NRC are: (a) setting priorities for generic issues based on safety significance, with a goal of eliminating issues with no or very limited safety significance; and (b) the use of the Systematic Assessment of Licensee Performance program to allocate more effectively the available inspector resources to nuclear facilities on the basis of observed performance.

To complement the efforts addressed above, the NRC has developed a proposed Nuclear Powerplant Licensing Reform Act that includes the following: (1) early approval of sites; (2) approval of standardized facility designs; (3) issuance of a combined construction permit (CP) and operating license; (4) deletion of the requirement for a mandatory CP hearing; (5) addition of a hybrid hearing process allowing for informal proceedings as well as the present formal hearings; and, (6) determination of the need for power and consideration of alternative generating means to be made by other federal, state, regional or local authorities rather than NRC.

Program Statement - continued

In summary, the NRC has taken positive steps to minimize the resources necessary to effectively regulate the nuclear industry. NRC continues to work to minimize the financial impact of its policies by basing requirement priorities on safety significance, by introducing a mechanism for the control of backfit requirements, and by allowing licensees to select the most cost effective way to satisfy NRC safety objectives. The budget estimates for the NRC are based on the premise of effective and efficient management that has as its goal the safety of the public and the regulation of a highly technical industry at minimum cost.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Commission - continued

Nuclear Reactor Regulation Programs..... $91,490

Summary of Nuclear Reactor Regulation Programs Estimates by Function

	Estimate FY 1982	Estimate[1/] FY 1983	Estimate FY 1984	Estimate FY 1985
Salaries and Benefits	$33,510	$37,230	$35,970	$34,830
Program Support	41,107	41,220	38,390	34,680
Travel	1,347	1,650	1,785	1,760
Administrative Support	11,579	14,280	15,345	15,870
Total Obligations	$87,543	$94,380	$91,490	$87,140
People	(738)	(748)	(730)	(709)

In accordance with the Atomic Energy Act of 1954, the Energy Reorganization Act of 1974, and the National Environmental Policy Act of 1969, the Office of Nuclear Reactor Regulation's (NRR) primary objective continues to be the assurance of adequate protection of public health and safety and the environment in the design, siting, construction, and operation of nuclear reactors. NRR is responsible for performing the safety, environmental and antitrust reviews for applicants for construction permits and operating licenses; changes to operating licenses for power and non-power reactors; and the licensing of reactor operators. Organizationally, the regulatory and licensing effort is divided principally among NRR's five divisions and two special project offices and the Regional Offices to (1) carry out project management functions; (2) perform detailed safety, environmental, and anti-trust reviews; (3) perform detailed performance-oriented evaluations for nuclear plant systems; (4) perform operational, administrative, and people-oriented reviews for human factors safety; (5) assure that basic safety and environmental policies, goals, and requirements are achieved by the regulatory and licensing process; and (6) provide regulatory oversight of TMI-2 cleanup operations.

The personnel and program support funding requirements to meet these responsibilities have been allocated to the major programmatic functions shown below. The estimates include resources for reactor regulation functions to be performed by the NRC headquarters and Regional Offices. The narrative that follows provides justification for each program.

1/ Includes $860,000 for the FY 1983 Pay Raise Supplemental

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Operating Reactors	$10,808	218	$11,341	290	$ 9,034	306	$ 9,021	312
Systematic Safety Evaluation of Operating Reactors	2,035	42	1,599	36	4,766	34	5,166	42
Operator Licensing	4,434	16	4,736	33	4,840	43	3,863	44
Casework	15,011	297	11,739	207	8,745	178	6,895	146
Safety Technology	8,507	106	11,490	116	11,005	113	9,735	112
TMI-2 Cleanup	230	17	315	17	0	7	0	7
Management Direction and Support	82	42	0	49	0	49	0	46
Total	$41,107	738	$41,220	748	$38,390	730	$34,680	709

The FY 1981 and FY 1982 licensing recovery effort to minimize/eliminate licensing delays has been successful. Unnecessary delays in issuing operating licenses have been essentially eliminated for plants scheduled to be completed in FY 1983 and beyond. The FY 1983 and 1984 budget will continue to implement the safety requirements based on the lessons learned from technical resolution of TMI-2 Action Plan issues and Unresolved Safety Issues. If approved by the Commission, Phase III of the Systematic Evaluation Program would begin in FY 1983 and would be integrated with the National Reliability Evaluation Program. NRC will continue to place special emphasis on the regulatory activities necessary for the decontamination of TMI-2, defueling the reactor, and disposition of the radioactive waste. The study and resolution of important generic safety issues will be pursued based on their safety significance priority as determined in FY 1982.

Operating Reactors	FY 1982	FY 1983	FY 1984	FY 1985
	$10,808	$11,341	$9,034	$9,021
	(218)	(290)	(306)	(312)

The regulatory activities associated with operating power reactors that are necessary to protect the public health and safety will continue to be NRR's first priority. To assure that operating facilities achieve and maintain adequate levels of protection of public health and safety and the environment, NRR and the Regional Offices will take the necessary actions to correct identified inadequacies in plant design and operation, to review and act upon licensees' requests for amendments to operating licenses, and to implement new or revised regulations and criteria for all operating facilities. Accordingly, NRR and the Regional Offices will conduct the technical review necessary to accomplish licensing actions (e.g., amendments, orders, petitions, hearings, fuel reloads, and multiplant issues) and manage the overall technical and procedural aspects of safety and environmental reviews. In doing so, NRR will continue to:

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

- ensure that plants operate safely by using operating data, design information, results of resolved safety and environmental issues, and inspection and enforcement findings, as the basis for taking necessary action in the form of licensing orders and changes in allowable operating conditions.

- review and evaluate operating reactor events and resolve each issue in a manner consistent with continued safe plant operation.

- assimilate lessons learned from each operating event into the licensing process to ensure consideration of the event in the review of construction permit and operating license applications.

- prevent unnecessary restrictions in plant operations by prompt review and modification of license conditions based on licensee requests to modify plant systems and reactor fuel load configurations.

The projected number of operating reactors and sites at the end of the fiscal years is as shown below.

	FY 1982	FY 1983	FY 1984	FY 1985
Reactor Units	75	91	104	110
Reactor Sites	49	61	69	74

To enhance the overall safety of operating reactors, the NRR programs will continue to pursue the goal of providing one project manager for each one-unit site and similarly designed two-unit sites, and two project managers for all three-unit sites and two-unit sites with differently designed reactors.

By accomplishing the workload shown below the inventory of operating reactor licensing actions is expected to be reduced to an acceptable level by the end of FY 1985. The licensing actions identified in NUREG-0737, "Clarification of the TMI Action Plan Requirements" will continue to be reviewed and implemented. The implementation schedule for Unresolved Safety Issues (USI) and Generic Issues, including the remaining items from NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident," is compatible with their technical resolution. The projected licensing action workload, including implementation of the TMI Action Plan, resolved USI's and actions resulting from the Systematic Evaluation Program (SEP), as well as other multiplant and plant-specific actions, is:

Licensing Actions Reviewed and Completed			
FY 1982	FY 1983	FY 1984	FY 1985
2700	2300	2100	1900

NRR is also required to conduct rapid initial safety assessments of unanticipated events at operating facilities and to develop generic technical positions on safety or environmental aspects of nuclear power plant design, construction or

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

operation directly related to operating facilities. NRR evaluated and developed short-term regulatory positions on unanticipated operating events that occurred during FY 1982. Examples of Unanticipated Events during FY 1982 include: safety assessments of the R.E. Ginna steam generator tube rupture, San Onofre 1 failure of Safety Injection System (SIS) valves, Zion loose parts and damage to the primary side of the steam generator, and the Pilgrim water level instrumentation oscillation.

The number of unanticipated events and associated resources are projected to increase commensurate with the increase in the number of operating reactors.

The staffing increase in FY 1984 results from implementing the assignment of project managers per site (as discussed above), the increased number of operating reactors, and the more resource-consuming licensing actions scheduled to be reviewed.

Systematic Safety Evaluation of Operating Reactors	FY 1982	FY 1983	FY 1984	FY 1985
	$2,035	$1,599	$4,766	$5,166
	(42)	(36)	(34)	(42)

The NRC is conducting an ongoing, comprehensive, systematic review of previously licensed operating nuclear power facilities with respect to current licensing requirements. The program documents the results of the review and identifies the needed plant changes. This effort includes two assessment programs--the Systematic Evaluation Program (SEP), a deterministic review of specific safety topics, and the National Reliability Evaluation Program (NREP), a probabilistic analysis of accident sequences.

SEP, initiated in late FY 1977, assesses the adequacy of the design and operation of power reactors, compares them to current safety criteria, and provides the basis for integrated and balanced backfit decisions. Phase I of the program, which established guidelines, techniques, and safety topics for conducting the assessments, is complete. Phase II, the actual review of 10 older operating plants, is nearing completion. In FY 1982, NRR completed all technical topic reviews for 6 of the 10 Phase II plants, and issued draft Integrated Safety Assessments for two of the plants (Palisades and Ginna). The remaining Phase II topic reviews and integrated safety assessments are planned to be completed in FY 1983.

SEP Phase III, planned for FY 1983 - 1985, pending Commission approval based on the review and evaluation of the safety benefits, will provide documentation on how each of 11 additional operating reactors compare to current safety criteria. The issues for the Phase III plants will be determined from experience with SEP Phase II. Phase III is expected to consist of about 40 topics for each of 11 plants, and will be integrated, to the extent possible, with the NREP program. Resource requirements are based upon reviewing plants of similar age and with similar design features to improve the efficiency of the reviews.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

As experience is gained from the additional SEP reviews and knowledge is gained from the NREP reviews, safety topics of particular significance will be added and safety topics of lesser significance will be deleted from the list.

The NREP program will use probabilistic techniques to assess the safety (design, operational deficiencies, etc.) of power reactors. NREP will be integrated with the SEP to assist with assessments of the safety significance of deviations from current safety criteria, backfitting decisions, and the identification of significant safety issues. A draft program plan to select sites, establish schedules, and determine the scope of the probabilistic risk assessment studies was issued for review in August 1982. The NREP program, if approved, will be initiated in FY 1983. The duration of each plant review is estimated to be 1-2 years. Ten NREP reviews are expected to be completed per year beginning in FY 1985.

Decreased resources in FY 1983 reflect the level of effort associated with completion of SEP Phase II topical reviews in early FY 1983 and evaluation of the results of SEP Phase II. The increase in FY 1984 is due to the first full year of the SEP Phase III and NREP programs.

Operator Licensing	FY 1982	FY 1983	FY 1984	FY 1985
	$4,434	$4,736	$4,840	$3,863
	(16)	(33)	(43)	(44)

The activities associated with operator licensing include the preparation, administration, and grading of examinations for the licensing of Reactor Operators (ROs) and Senior Reactor Operators (SROs), the requalification testing of ROs and SROs, and the certification of licensee training facility instructors. Other activities include operator examinations for non-power reactors, training program audits, and generic activities.

The ability of reactor operators to fully perform their duties under both normal and abnormal conditions is important to the safe operation of nuclear reactors. The NRC, as a part of its effort to verify the competence and ability of reactor operators, has made some modifications and is continuing to consider further modifications to the examination program in order to improve the ability to measure the qualifications of ROs and SROs. During FY 1982, NRR conducted operator examinations at five new operating reactors in order to certify the capability of the licensee staff needed for initial startup, testing, and low-power operation. Over 150 site visits were made to administer replacement examinations for ROs and SROs at operating reactors.

The operator licensing function was partially assumed by Region III in FY 1982. This program is expected to be fully decentralized by FY 1984. In FY 1984 and FY 1985, NRR headquarters will perform generic activities, develop policy and guidance for the regions, provide technical support and staff development, and conduct program evaluation; the Regions will administer all initial qualification, replacement, requalification and certification examinations.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

Resource estimates are based upon administering written, oral, and simulator examinations at reactor units having plant-specific simulators and a written exam and an expanded oral exam at reactor units without plant-specific simulators.

In FY 1983, NRC will begin to administer operator requalification examinations. Licensees will continue to administer written and oral requalification examinations to all reactor operators. Also in FY 1983, NRR will begin to certify licensee training facility instructors.

Anticipated workload for operator licensing is shown in the following table:

Examinations	Site Visits		
	FY 1983	FY 1984	FY 1985
Cold Exams	15	11	5
Hot Exams	8	14	11
Replacement Exams	122	148	164
Requalification Exams	61	74	82
Certification Exams	35	84	57
Non-Power Reactor Exams	50	50	50

Resource increases in FY 1983 and beyond are due to NRC administering requalification examinations and reflect the increasing number of operating reactors.

	FY 1982	FY 1983	FY 1984	FY 1985
Casework	$15,011	$11,739	$8,745	$6,895
	(297)	(207)	(178)	(146)

The Casework program includes the effort associated with the safety, environmental, and antitrust reviews, including the public hearing process, for applications for a Construction Permit (CP), Operating License (OL), and standard plant design approval. Casework also includes topical report reviews. The CP review includes the review of an applicant's preliminary design of a nuclear facility and a detailed review of the site selection process, as well as the safety and environmental aspects of the proposed site. This review must be completed prior to the start of any construction, unless an exemption has been requested and granted. A Limited Work Authorization (LWA) may be issued prior to issuance of a CP if all environmental and site suitability considerations are satisfied. The OL review involves the review of the final design of the plant. This phase starts approximately three years prior to the expected fuel load date. The standard plant design concept offers an opportunity for reactor designers and architect/engineers to submit standard designs for review that can be referenced by future license applications. Topical Report reviews are conducted on technical reports submitted by industry organizations (usually reactor vendors or architect/engineers) on subjects related to a class of nuclear reactors, and their associated systems or operation. For all casework activities, the staff performs independent,

detailed audit calculations to verify applicant results in certain selected review areas critical to safety.

NRR will continue to:

- review license applications to ensure that safety and environmental reviews are conducted in a manner that adequately protects the public health and safety, preserves environmental values and prevents situations inconsistent with antitrust laws; and

- schedule reviews to ensure the review process will not be a critical path item that would delay the reactor fuel load and startup testing.

The major efforts in the operating license review area have been to ensure that the TMI-related requirements have been met prior to issuing new operating licenses and to minimize unnecessary delays in the review and hearing processes for near-term OL applications. NRC has adapted the TMI-2 Action Plan to the pending construction permit (CP) and manufacturing license (ML) applications by issuing a final CP/ML rule.

In FY 1982, NRC issued two full-power and three low-power operating licenses. A site suitability report for Clinch River Breeder Reactor (CRBR) has been issued, and technical reviews for applications to operate power reactors have been completed. Of these, nine OL review cases are now in the hearing stage of the licensing process.

The applicant's estimated construction completion date was used to project the number of applications docketed and under review and the number of licenses expected to be issued during the planning period. In developing the case review resource requirements for OL applications, NRR used plant-specific milestone dates for facilities scheduled for completion in FY 1982-1983 and for those beyond FY 1983 for which dates were available. For all others a standard 31-month schedule to conduct the review and hearing process was assumed. Also, the applicant's construction completion date was used as the NRC decision date. The OL resource requirements were based on 20 professional staff-years per review.

The resource estimates for the CP and ML applications in-house were determined on a case-specific basis, dependent on the number of non-TMI open issues, the staff's TMI-related requirements, and the expected CP or ML decision date.

The following table summarizes the casework applications under review and the planned licensing completions in FY 1982-1985.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

Types of Reviews	FY 1982*	FY 1983*	FY 1984*	FY 1985*
Power Reactors:				
OL Applications:				
under review	31(49)	36(51)	28(40)	21(27)
completed**	(2)	(16)	(13)	(6)
CP/ML Applications:				
under review	4(12)	2 (3)	1 (1)	0
completed	1 (8)	1 (2)	1 (1)	0
Standard Plant Applications:				
under review	2	3	1	1
completed	0	2	0	1
Non-power Reactor Renewal Applications:				
under review	26	22	13	0
completed	5	9	10	0

*For Power Reactors, numbers in parentheses represent the number of units; numbers not in parentheses represent number of sites.
**Commission projected full power decision.

The decrease of both staffyears and program support funding is due to the lower casework workload projected in FY 1983 and FY 1984.

Safety Technology	FY 1982	FY 1983	FY 1984	FY 1985
	$8,507	$11,490	$11,005	$9,735
	(106)	(116)	(113)	(112)

The Safety Technology program is directed at developing independent agency positions on significant issues that relate to the safety aspects of reactor design, construction and operation. It also includes an integrated program to develop, review and maintain licensing and regulatory requirements. The activities encompassed in this program include:

- Unresolved Safety Issues (USIs) - An Unresolved Safety Issue is a matter that affects a number of nuclear power plants and poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed. The issues involve conditions not likely to be acceptable over the lifetime of the plants they affect. The NRC conducts activities to develop technical positions on these safety-related issues of nuclear power plant design, construction, or operation. These tasks are conducted in support of licensing activities. Progress on Unresolved Safety Issues is reported to the Congress in the NRC Annual Report pursuant to Section 210 of the Energy Reorganization Act of 1974, as amended.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

- Generic Issues - Develop technical positions on issues that relate to the safety or environmental aspects of nuclear power plant design, construction, or operation. These tasks are conducted in support of licensing activities. The generic issues programs are described in NUREG-0410, "NRC Program for the Resolution of Generic Issues Related to Nuclear Power Plants" and NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident." Also included is the NRC Long Range Human Factors Program Plan and generic issues identified since publication of the NUREGs above. These issues are being prioritized on the basis of safety significance.

- Risk Assessment - Develop and evaluate reliability and risk assessment methods and techniques for application to nuclear power plants and their systems important to safety, with principal emphasis on new or potential safety issues, and the identification of high risk accident sequences for consideration in developing new regulatory and safety requirements or in evaluation of existing requirements.

- Research and Standards Coordination - Coordinate activities involving the Office of Nuclear Regulatory Research (RES), including developing NRR research needs to support licensing activities, participating in research review groups, providing technical guidance for each research contract, and participating in the review and development of standards (e.g., rules, regulatory guides, industry standards).

- Regulatory Requirements - Maintain and update the standard technical specifications for operating light water power reactors based on new regulatory requirements, new technical considerations, and operating experience. Coordinate updates to the Standard Review Plan (SRP) and the Standard Format and Content Guide. Perform a continuing systematic review of the safety significance and value impact of regulatory requirements for licensing and operation. Perform analyses of relevant new information.

- Code Analysis and Maintenance - Evaluate, modify, verify and maintain analytical tools, such as computer codes, for the performance of audit calculations.

In FY 1982, NRR issued the final technical resolution for USI A-39, (SRV Pool Dynamic Loads) and task action plans for three others. Three TMI Action Plan issues were technically resolved and a preliminary reprioritization of all NRR Generic Safety Issues was completed. The NREP procedures guide was completed and a draft Long Range Human Factors Program Plan was prepared. Development of a management information system for monitoring the status of safety-related issues and proposed new requirements was initiated.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

Resources for FY 1983-1985 are required to:

- Develop resolutions for the 13 unresolved USIs currently under review including an additional two USIs per year that are expected to be added in FY 1983, FY 1984, and beyond. Four USIs are expected to be resolved in FY 1983, six (including Pressurized Thermal Shock) in FY 1984, and three in FY 1985.

- Develop technical resolutions for important generic issues (including TMI Action Plan issues) in the areas of engineering, systems integration, and human factors. Resolve seven generic safety issues in FY 1983 and 18 in FY 1984. In addition, NRC will complete work on the long range human factors program plan, implement the program making effective use of available human factors data, and will improve qualification and requalification programs for reactor operators.

- Develop programs to improve staff capability for assessing risk from external events, and risk resulting from severe core damage accident sequences. Perform short reviews of the conclusions of risk studies (Zion, Indian Point 3, Limerick, and IREP) and apply the results to licensing activities.

- Coordinate NRR activities related to research and industry standards. Review and endorse programs proposed by RES in response to NRR requests. Coordinate and document NRR review of research reports and Research Information Letters. Coordinate NRR participation in research review groups, industry standards groups, meetings with the NRC Advisory Committee on Reactor Safeguards, and others on research and standards activities. Coordinate NRR reviews, comments and endorsements of proposed regulations, guides and standards. Provide technical support within NRR for the development and implementation of standards and technical evaluations of, and recommendations for, research programs on nuclear reactor safety and environmental protection needed by NRR.

- Prepare regulatory analyses (value-impact) of 25 NRR sponsored regulatory requirements per year, including SRP and Standard Technical Specifications (STS) revisions and resolved USIs, generic issues, and TMI Action Plan items. Review and evaluate regulatory analyses, and make recommendations regarding proposed regulatory requirements. Perform reliability and risk studies to assure new requirements are justified, and prepare an analysis of these requirements for review by the NRC Committee to Review Generic Requirements (CRGR). Identify and prioritize all proposed requirements not yet issued to licensees. Make recommendations whether to implement these requirements. Identify current regulatory requirements that are overly conservative, based on the results of regulatory research, analyses, or results of PRA. Make recommendations for changes in these regulatory requirements that significantly reduce cost without adversely affecting risk. Audit the implementation of regulatory requirements in licensing actions. Audit new licensing actions and backfitting of new requirements.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

- Evaluate licensee analytical codes relevant to demonstrating compliance with licensing requirements. Review anticipated industry submittals of advanced analytical techniques. Provide an independent capability to use these codes to assure applicant/licensee compliance with licensing requirements.

	FY 1982	FY 1983	FY 1984	FY 1985
TMI-2 Cleanup	$230	$315	$0	$0
	(17)	(17)	(7)	(7)

This activity, initiated in April 1980, provides the regulatory review, direction, and oversight of the TMI-2 cleanup operations including the technical and managerial supervision of the related NRC inspection, licensing, analysis, and government relations actions onsite, in the Middletown, PA office, and in the Washington, DC area. NRC will continue to ensure the maintenance of protection of public health and safety and the environment during decontamination and disposal of radioactive waste from TMI-2.

NRC will continue to maintain coverage by the technical staff at the site and at headquarters, as necessary, to review and approve licensee cleanup activities, to oversee implementation of these activities so as to ensure adequate protection of public health and safety, to verify that NRC rules and regulations are being followed, to prepare necessary environmental assessments for the various phases of the TMI-2 cleanup process, and to revise technical specifications, as needed, to assure adequate protection of the public health and safety. NRC will conduct special evaluations of problems that arise during the course of facility decontamination, and fuel removal and disposal. Also, in cooperation with the Department of Energy, Electric Power Research Institute, and General Public Utilities, NRC will plan and conduct an investigation of the TMI-2 cleanup process on decontamination technology, radioactive waste handling, and fission product release, transport, and disposition. Information obtained will be used to ensure that cleanup activities are conducted in a manner that will minimize risk to public health and safety. NRC will also assess the environmental impact of each phase of the TMI-2 cleanup effort and prepare and issue supplements to the Programmatic Environmental Impact Statement as needed.

The Regions will be delegated onsite regulatory responsibility for TMI-2 cleanup activities beginning in FY 1984, continuing in FY 1985 and thereafter. NRR will provide regulatory oversight of the TMI-2 cleanup operations.

	FY 1982	FY 1983	FY 1984	FY 1985
Management Direction and Support	$82	$0	$0	$0
	(42)	(49)	(49)	(46)

This effort includes major functions necessary to support NRR regulatory and licensing activities. It also includes that portion of the Regional office management and administration that is allocable to NRR programs.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Reactor Regulation Programs - continued

Director's Office - Consists of the Director, Deputy Director, and the Planning and Program Analysis Staff. The Director develops and administers regulations, policies, and procedures required for regulating nuclear reactors; provides overall management and guidance on major program goals and objectives; and performs other functions necessary to execute the NRC reactor licensing program. The Planning and Program Analysis Staff provides administrative support for managing and coordinating NRR programs and resources, and technical coordination and oversight for resolution of special technical problems, including technical assistance to the Director. The staff establishes priorities, schedules, and resource allocations; leads the budget development/execution process; manages all personnel administrative matters; prepares, reviews, and recommends administrative operating procedures, policies, and directives; and serves as the NRR interface with the Advisory Committee on Reactor Safeguards (ACRS) and the Committee to Review Generic Requirements (CRGR).

Support to Others - Provide direct technical assistance to other NRC offices (except the Office of Nuclear Regulatory Research and Regional Offices), other Federal agencies, and support of international technical exchange programs.

Correspondence - Respond to Freedom of Information Act and Privacy Act requests and to other inquiries from the Administration, Congress, other Federal and State agencies, and the general public.

Regional Support - Provide clerical/administrative support to all Regional staff members (except direct support, which is included in other NRR programmatic decision units).

In FY 1983, 1984 and beyond, the NRR Programs will continue to provide the policy management, direction, technical and administrative assistance needed to ensure that the functions of the office are carried out efficiently and effectively; provide on a limited basis technical manpower support as requested; and continue to respond, in a timely manner, to the large volume of correspondence.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Regulatory Commission - continued

Inspection and Enforcement Programs..... $70,910

Summary of Inspection and Enforcement Programs Estimates by Function

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Total Program:				
Salaries and Benefits	$38,245	$41,500 1/	$42,390	$42,350
Program Support	9,518	14,490	14,650	18,130
Administrative Support	7,311	8,600	9,000	9,410
Travel	4,470	4,690	4,870	4,880
Total Obligations	$59,544	$69,280	$70,910	$74,770
People	(959)	(966)	(996)	(990)

The Inspection and Enforcement people requirements and program support funding requirements have been allocated to major programmatic functions as shown below. The narrative that follows provides justification to support these requirements.

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Reactors Under Construction	$ 1,589	212	$ 3,472	246	$ 3,223	212	$ 3,597	191
Reactors in Operation	2,771	470	4,754	452	4,593	517	4,646	533
Fuel Facilities and Materials Licensees	855	126	1,334	113	1,125	111	885	108
Emergency Preparedness	2,736	79	3,630	67	3,350	68	7,150	68
Specialized Technical Training	1,567	19	1,300	17	2,309	17	1,802	17
Management Direction and Support	0	53	0	71	50	71	50	73
Totals	$ 9,518	959	$14,490	966	$14,650	996	$18,130	990

The purpose of the Inspection and Enforcement Programs is to ensure that nuclear facilities and materials licensed under NRC jurisdiction are constructed, operated and used in a manner which protects the public health and safety and the environment, and that prompt and vigorous enforcement action is taken against

1/ Includes $960,000 for the FY 1983 Pay Raise Supplemental

Inspection and Enforcement Programs - continued

licensees who do not comply with NRC regulations. The Inspection and Enforcement Program is conducted by the NRC Headquarters Office of Inspection and Enforcement (IE) and NRC's five Regional Offices. The majority of program personnel are located in the Regional Offices. IE's Headquarters component has the responsibility for inspection policy and program development and appraisal, assessment of Regional implementation of the inspection and enforcement program, appraisal inspections to determine licensee and Regional performance, escalated enforcement actions, evaluation of licensee events, response to incidents by managing the NRC Operations Center, emergency preparedness, specialized technical training, and Quality Assurance. The Regional component implements the inspection program, initiates and takes certain enforcement actions, conducts systematic assessment of licensee performance (SALP), performs emergency preparedness annual reviews, responds to incidents by dispatching personnel to the site in question, and provides technical support to the Office of Investigations.

Regional implementation of the inspection program is based upon two basic formats: (1) scheduled, routine inspections designed to evaluate the licensee's activities within the context of the licensee having primary responsibility for protection of the public (the thrust of this effort is to critically examine, by systematic sampling, the implementation of licensee practices and controls designed to prevent conditions that might threaten the public and/or the environment); and (2) unscheduled, reactive inspections to assure the adequacy of licensee response to incidents and accidents, or to assess licensee compliance with special requirements imposed through NRC bulletins, orders, etc., to review licensee event reports, and to respond to allegations of poor licensee performance. These inspections are conducted by Region-based inspectors and resident inspectors. Ongoing on-site monitoring of licensee activity is done by the resident inspector.

Enforcement is jointly carried out by IE and the Regions through a program aimed at protecting the radiological health and safety of the public by (a) ensuring compliance with NRC regulations and license conditions; (b) obtaining prompt correction of noncompliance; (c) deterring further noncompliance; and (d) encouraging improvement of licensee performance. Under the enforcement program a series of sanctions that escalate according to the seriousness of the noncompliance and the past history of licensee performance may be imposed. Sanctions available to the NRC include notices of violation, civil monetary penalties, orders to cease and desist, and orders to suspend, modify or revoke licenses. NRC emphasizes prompt and vigorous enforcement in dealing with licensees who do not comply with NRC requirements. Licensees who are unable or unwilling to comply, or whose operations represent a threat to the public health and safety, will not be permitted to operate.

Response to incidents/accidents is carried out jointly by IE and the Regions. When necessary, the NRC Operations Center in Bethesda is activated and an Emergency Response Team from the Regions is dispatched to the site to (a) monitor and evaluate the situation; and (b) provide advice/information to

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

the licensee, Federal Emergency Management Agency (FEMA), state/local government officials, other federal agencies and the public.

Resource changes are related to: increased operational reactor workload, offset somewhat by a decrease in the workload for reactors under construction; and an increased effort at construction sites inspecting for quality in construction and effectiveness of Quality Assurance (QA) program management.

Reactors under Construction	FY 1982	FY 1983	FY 1984	FY 1985
	$1,589	$3,472	$3,223	$3,597
	(212)	(246)	(212)	(191)

The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 charge the NRC to regulate the production and use of nuclear materials and to promulgate regulations to protect the public health and safety. NRC rules and regulations require licensees to construct nuclear reactors in such a manner that when they become operational they will pose no threat to the public and the environment.

IE resources associated with Reactors under Construction are for developing and implementing inspection programs and policies, conducting Construction Assessment Team (CAT) inspections, recommending changes in licenses and standards, and notifying licensees of generic problems for reactors in construction and implementing several new NRC initiatives designed to improve the quality of reactor construction (QA initiatives). The majority of resources for this program are Regional personnel who conduct inspections for engineering safety, quality assurance, health physics, and safeguards at power reactors under construction and in pre-operation testing, and inspections of licensee contractor and vendor activities including their quality assurance and quality control programs.

The Reactors under Construction inspection program consists of conducting both routine (scheduled) and reactive (unscheduled) inspections by resident and Regional inspectors. Resident inspectors assume a portion of the inspection activity previously conducted by Region-based inspectors and provide a substantial increase in verification of licensee performance through direct observation of construction activities and independent measurements. The Region-based support consists of in-depth, specialized technical inspections. The following table summarizes the total number of Regional-based and resident inspector hours that will be expended on Reactors under Construction:

FY 1982	FY 1983	FY 1984	FY 1985
92,669	99,215	78,155	74,131

The declining figures reflect a declining workload of reactors under construction, although the planned number of inspection hours per construction site will actually increase.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

Nuclear reactors inspected under this program are those in the stage prior to receiving a construction permit, but authorized to proceed with construction work under a limited work authorization; those in early construction (first two years); mid-construction (third and fourth years); late construction (fifth and sixth years); and those in pre-operational testing.

Reactor workload is displayed below:

	FY 1982	FY 1983	FY 1984	FY 1985
Pre-construction Permit Units	7	2	0	0
Early Stage Construction Units	22	7	6	6
Mid-Stage Construction Units	18	10	9	7
Late Stage Construction Units	22	18	12	6
Pre-operation Test Units	18	20	15	14
Breeder Reactor	1	1	1	1

Supplementing the Reactors under Construction inspection program is the SALP program, a comprehensive annual appraisal of reactor licensees by the Regions which is designed to: improve licensee performance; improve the NRC regulatory program; identify other than average licensee performance; indicate which areas of the inspection program need increased emphasis and provide a basis for management allocation of NRC inspection resources.

In FY 1982, 10 additional resident inspectors were assigned to construction sites achieving 100 percent coverage by resident inspectors at active construction sites at which 15 percent or more of construction is completed. The table below indicates the actual number of construction resident inspectors that were assigned during FY 1982 and that will be assigned during FY 1983-1985 consistent with this assignment policy:

FY 1982	FY 1983	FY 1984	FY 1985
27	34	27	19

The construction inspection program is being modified to better address the problem of quality in construction of reactors. Over the past few years, significant construction quality deficiencies have been discovered at several reactors under construction. As a result, the Quality Assurance programs will be strengthened with specific attention to implementation. The NRC will encourage the industry to be more aggressive in assuring the adequacy of design, construction, and operation. Quality Assurance programs for plants under construction and awaiting licensing review will receive priority attention to ensure that the plants can be operated safely and that costly delays are avoided.

NRC's responsibilities in quality assurance include the following: to determine the adequacy of a licensee's quality assurance program description; to ascertain that the licensee has established and adequately implemented the approved quality assurance program and to verify compliance with NRC regulations; and to develop the regulations, standards and guides relevant to quality assurance in design, construction and operation of nuclear facilities.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

NRC is implementing a number of new initiatives designed to address the issues of quality in construction. Several initiatives directly address recognized deficiencies. These include: CAT inspections which focus on licensee performance and are used to determine effectiveness of the routine inspection program and third-party inspections (discussed below) and to assess management control and effectiveness of construction projects; Design Assessment Team (DAT) inspections which will provide increased assurance that the as-built configuration of a plant conforms with its design and underlying design assumptions, and that design changes have been properly controlled; and an increase in inspection resources assigned to each unit under construction (total inspection staff years program- wide will decrease after FY 1983 due to a declining workload; however, the number of inspection staffyears per plant under construction will increase). Regional inspection effort at reactors in construction will be increased by 0.3 staffyears per unit in FY 1983 and an additional 0.2 staffyears per unit in FY 1984-1985 to deal more effectively with quality problems in the construction and design of power reactors.

To avoid duplication of effort and more effectively utilize available NRC resources, IE is continuing development of programs for oversight of third-party inspections and evaluation reports with the American Society of Mechanical Engineers (ASME) and the Institute of Nuclear Power Operations (INPO) in the areas of reactors under construction and reactors in operation. The CAT program is part of this oversight effort, with approximately four CAT inspections per year starting in FY 1983; however, a greater number of CAT inspections will be required if the INPO and/or other third party inspection programs prove unsatisfactory.

In addition to these near term initiatives, NRC is conducting an intensive review of NRC and licensee QA and project management programs in order to determine the programmatic root causes of significant quality problems in construction and to determine the underlying essential constituents of successful programs. This initiative, called the Long Term Review, is responsive to Congress' direction that NRC undertake a study of existing and alternative programs for QA and provide a report to Congress on the results of the study. The results of this study and recommendations resulting from it will provide direction for NRC's future QA policies and programs.

Regions II and IV are continuing efforts in support of construction permit and licensing reviews of the Clinch River Breeder Reactor (CRBR). The CRBR, with its liquid metal technology, poses a significant new workload for the Regions, as they have no previous inspection or engineering staff expertise for this type plant. Because it is a prototype plant, the inspection activity will need to be more intense than for a pressurized water reactor (PWR) or boiling water reactor (BWR). Staff effort will be needed initially to assess the status of the CRBR in terms of components already manufactured and in storage, those in the manufacturing process, and those in the design stage, as well as to orient the inspection program's focus toward the most critical areas, as existing inspection procedures for PWRs and BWRs have only limited application to these CRBR concerns.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

The non-destructive examination (NDE) van is used by the Regions to perform ultrasonic, magnetic particle, fluoroscopic and other NDE examinations of welds, metallic surfaces, concrete samples, and piping. The primary focus of the van will be verification of the technical accuracy of construction work at sites where significant allegations have been received and where the routine inspection program identifies a breakdown in the licensees' quality assurance program. During FY 1982, the van was used at Washington Nuclear 2, Beaver Valley, Limerick, Seabrook and Shoreham. During FY 1983-1984 the van will be used at Washington Nuclear 2, Hope Creek, Indian Point 2 and 3, Waterford 3, Zimmer, Nine Mile Point, Commanche Peak, Wolf Creek, Susquehanna 2 and Millstone 3.

Vendors and contractors who supply components to reactors under construction are inspected to review documented procedures, to interview personnel, and to examine both design and hardware, determining if adequate quality control procedures have been prepared and are being followed. Licensees remain responsible for final product acceptance.

IE reviews all construction deficiency reports and vendor reports and appropriate actions are taken. These reviews number approximately 4,000 per year.

The number of actual and planned vendor and contractor inspections are as follows:

Inspections	FY 1982	FY 1983	FY 1984	FY 1985
Reactor System	30	30	30	30
Component	100	100	100	100
Reactive	120	146	159	172
Equipment Qualification	20	20	20	20

NRC has initiated a trial program with the ASME to test the use of third-party inspection systems as a means of supplementing NRC inspections. Third-party inspections by ASME would expand and strengthen NRC inspection of mechanical component manufacturers. NRC has recommended that ASME incorporate changes to their quality assurance requirements to make them compatible with those of the NRC. It is expected that ASME will make these changes imminently and their program will be routinely implemented. NRC endorsement of this ASME action is expected to be accomplished through rulemaking or regulatory guide.

Program support funds in FY 1984 will be used to conduct independent measurement efforts in composition, strength and fracture toughness of material samples; to conduct ultrasonic, radiographic and metallurgical tests of welds and joints used in reactor construction; and to provide technical assistance in support of the expanded QA inspection program. Program support funds in FY 1984 will also provide highly specialized contractor assistance for the CRBR and continue an ongoing contract for environmental qualification of safety-related equipment.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

The decreased level of staffing in FY 1984 is due to decreased reactor construction workload. The decreased funding level for FY 1984 reflects completion of the Long Term Review (QA).

Reactors in Operation	FY 1982	FY 1983	FY 1984	FY 1985
	$2,771	$4,754	$4,593	$4,646
	(470)	(452)	(517)	(533)

The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 charge the NRC to regulate the production and use of nuclear materials and to promulgate regulations to protect the public health and safety. NRC rules and regulations require licensees to operate their reactors in a safe manner.

IE Headquarters resources associated with the Reactors in Operation program are for developing and appraising the inspection program and policies, assessing regional implementation, conducting Performance Appraisal Team (PAT) inspections, developing and coordinating third-party inspection programs and agreements, recommending changes in licenses and standards, analyzing operational events, and notifying licensees of generic safety problems and required preventive actions. The majority of resources for this program are Regional personnel who conduct safety, health physics, safeguards and engineering inspections at reactors which have an Operating License, as well as resources associated with SALP and vendor and contractor inspections for these reactors.

The inspection program consists of conducting both routine (scheduled) and reactive (unscheduled) inspections. Nuclear reactors inspected are: power reactors in start-up testing and commercial power operation; and non-power (test and research) reactors. The inspection program will continue to place emphasis on direct observation of plant operations at each nuclear reactor. A significant portion of this effort is performed by resident inspectors. Inspection program emphasis for the resident inspectors is placed on observation of licensee practices and operational safety verification. Region-based inspectors carry out inspections in specialized areas and/or in-depth technical inspections. As with Reactors under Construction, this inspection program is supplemented by the SALP program, a comprehensive annual appraisal of power reactor licensees.

Operation resident inspectors are assigned to all sites having one or more units in operation or pre-operational testing. The FY 1982 (actual) and FY 1983-1985 plan for assignment of resident inspectors is as follows:

FY 1982	FY 1983	FY 1984	FY 1985
106	120	124	127

Four additional positions are required in FY 1984 and another three positions are required for FY 1985 to assign resident inspectors to operating reactor sites as units convert from the construction phase to the pre-operational test

Inspection and Enforcement Programs - continued

phase. Regional inspector growth is the result of an increase in operating reactor workload.

Operating Reactor workload is displayed below:

	FY 1982	FY 1983	FY 1984	FY 1985
Reactor Units	75	91	104	110
Non-power Units	85	85	84	84

Vendors and contractors who supply components to operating reactors for retrofit, updating and replacement are inspected to review documented procedures, interview personnel, and examine both designs and hardware to determine if adequate quality control procedures have been prepared and are being followed. Licensees remain responsible for final product acceptance.

The PAT program focuses on inspection program effectiveness and licensee performance from a national perspective by conducting comprehensive inspections and comparing their results to those documented in earlier Regional/resident inspections. In addition, PAT inspections are utilized as a method of monitoring INPO's evaluation program.

IE reviews all operating reactor events as reported by License Event Reports and as reported to the NRC Operations Center for appropriate immediate action and for prompt generic response. The total of these reports numbers approximately 5,000 per year.

IE disseminates information to the Regions and licensees on regulatory actions taken by IE and on operational problems/events that occur at licensed facilities. Information is distributed through various sources such as notices, bulletins, circulars and press releases. As appropriate, recommended or required actions are specified and follow-up inspection procedures are issued. Also, information is provided to the Commission, other NRC offices, other government agencies, licensees, and the public.

As examples of program effort, during FY 1982, 39 information notices, three bulletins and three circulars were issued on specific potential operating problems; six PAT program inspections were conducted; and, an alcohol and drug abuse survey was conducted, which will result in licensee actions to improve personnel reliability. During FY 1983-1985 approximately 75 inspection procedures will be reviewed each year. The following table indicates the total number of Regional inspection hours actually expended in FY 1982 and those which will be expended in FY 1983-1985 for Reactors in Operation:

FY 1982	FY 1983	FY 1984	FY 1985
122,323	175,133	197,063	209,700

Program support funds in FY 1984 will be used to provide contractual assistance in developing and applying techniques for evaluation of the inspection program,

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

and to support Regional inspection activities and contracts with certain states. These contracts include aerial radiological surveys at reactor sites, confirming independent measurements, state environmental monitoring of reactor sites, technical assistance in the performance of evaluations of licensee response and compliance with operating safety bulletins, and the thermoluminescent dosimeter network, an off-site radiation measurement program. In FY 1983-1984, Regional Offices will conduct, using contractor assistance, a one-time intensive inspection of licensee compliance with fire protection regulations (10 CFR 50.48 and Appendix R). This type of intensive examination has proven very valuable in both the health physics appraisals at reactors, as well as the ongoing emergency preparedness appraisal activity. In addition, the one-time intensive inspection provides an excellent baseline for the use of a follow-on audit inspection approach.

Although resident inspectors are increasing in FY 1983, total staffing decreases due to reduced requirements resulting from a change in the Resident Assignment Policy at single unit sites. The current policy requires two residents only at selected single unit sites instead of two residents at 50 percent of single unit sites required under the previous policy. Staffing increases in FY 1984, as well as FY 1985, are due to increased operating reactor workload. Program support funds decrease in FY 1984 as one-time contracts for in-depth surveys are completed.

Fuel Facilities and Materials Licensees	FY 1982	FY 1983	FY 1984	FY 1985
	$855	$1,334	$1,125	$885
	(126)	(113)	(111)	(108)

The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 charge the NRC to regulate the production and use of nuclear materials and to promulgate regulations to protect the health and safety of the public. NRC rules and regulations require licensees to operate their facilities and use nuclear materials in a safe manner. The programs and resources reflected in this program are required to inspect and evaluate the processing and use of nuclear materials at fuel cycle facilities and materials licensees, and in transit.

Headquarters resources devoted to this program are for developing and appraising the radiological safety and safeguards inspection program, assessing Regional implementation, screening events and identifying generic problems, administering inspection programs and policies, recommending changes in licenses and standards, and notifying licensees of generic problems.

The vast majority of resources for this program are Regional personnel who inspect fuel facility and materials licensees. Regional Offices conduct three types of routine and reactive inspections: (1) radiological safety inspections (including transportation); (2) material control and accounting (MC&A) inspections, designed to assess if the licensees are adequately controlling and accounting for special nuclear material (SNM) in their possession; and

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

(3) physical security inspections, designed to assure that licensees are adequately protecting facilities and shipments and their contents against theft, diversion and sabotage.

Licensees inspected include fuel facilities, i.e., uranium mills, uranium hexafluoride facilities, fuel processing and fabrication facilities, spent fuel reprocessing facilities, and fuel and radioactive waste storage and disposal facilities; materials licensees which possess and use byproduct, source and SNM in radiography, medical, academic, research and industrial applications; and licensees who transport SNM or irradiated reactor fuel. Also, MC&A inspections are conducted to assure that the United States meets its commitments to the International Atomic Energy Agency.
Workload for the fuel facilities and materials inspection program is displayed below:

Fuel Facilities	FY 1982	FY 1983	FY 1984	FY 1985
Plutonium Processing	1	1	1	1
Uranium Processing	18	18	18	18
UF-6 Processing	2	2	2	2
Uranium Mills	14	14	14	14
R&D Facilities	2	2	2	2
Spent Fuel Storage Facilities	2	2	2	2
Decommissioned Facilities	3	3	3	3
Material Licensees to be Inspected	2,643	2,643	2,643	2,643

The Safeguards portion of the Regional inspection program includes a resident inspector assigned to the Nuclear Fuel Services plant in Erwin, Tennessee.

The total number of Regional inspection hours actually expended in FY 1982 and those which will be expended for this decision unit in FY 1983-1985 is as follows:

FY 1982	FY 1983	FY 1984	FY 1985
27,913	42,695	40,479	40,307

During FY 1982, a health physics appraisal program was completed at all uranium mills. This provided an in-depth evaluation with the resultant feedback used to assist in review and revision of the inspection program and to identify generic items which need to be addressed in FY 1983-1985. New inspection procedures for physical security were developed to meet the requirements of new regulations on physical security of facilities, materials in transit, guard qualification and training, contingency planning and information security.

In FY 1983, a major revision of the Fuel Facility and Materials Licensee Inspection program will begin and will be completed by the end of FY 1984.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

In FY 1984, staff will continue the inspection of fuel facilities and materials licensees and with program support funds will continue the independent measurements program.

Funds will provide replacement parts for Regional fixed laboratories and for mobile vans which are an integral part of NRC's independent measurement program.

Funding declines in FY 1984 with completion of one-time contracts for laboratory evaluations, inspections of licensees' internal audit programs, and MC&A inspection program development.

Emergency Preparedness	FY 1982	FY 1983	FY 1984	FY 1985
	$2,736	$3,630	$3,350	$7,150
	(79)	(67)	(68)	(68)

The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 charge the NRC to regulate the production and use of nuclear materials and to promulgate regulations to protect the public health and safety. NRC rules and regulations require all nuclear power reactor licensees, beginning on April 1, 1981, to have upgraded emergency plans and procedures implemented, and to exercise these plans annually. The resources contained in this program are required to: (a) evaluate the state of emergency preparedness at nuclear power facilities to determine that on-site and off-site personnel, plans, procedures, and equipment are adequate in the event of a radiological emergency; (b) provide sections of Safety Evaluation Reports (SERs) - a requirement of the licensing process; (c) develop guidelines and criteria for use by licensees and NRC to upgrade incident response capabilities; (d) develop NRC incident response capabilities; and (e) assess the Regional implementation of the emergency preparedness and incident response programs.

For reactor near-term operating license (NTOL) applicants, an initial emergency preparedness license review is conducted. This initial review is an in-depth, comprehensive evaluation which licensees and applicants must pass to receive an operating license. Subsequent reviews (performed annually by the Regions) are less comprehensive (approximately 1/3 of the elements of the initial review are evaluated annually). Emergency preparedness plans for construction permit applicants are also reviewed for conformance to rules and regulations and an SER input is prepared. These reviews, evaluations, inspection reports, SERs and any resulting testimony are prepared by teams consisting of Regional and resident inspectors, contractors and Headquarters staff.

By April 1, 1982, all operating nuclear power plant sites had been visited for initial emergency preparedness implementation reviews and evaluations, and exercises. In FY 1983, the program will verify that upgraded emergency response facilities, communications systems and procedures have been installed. Also in FY 1983, the Regions will assume complete responsibility for implementing annual

Inspection and Enforcement Programs - continued

reviews and initial on-site NTOL reviews for new applicants and continue these efforts in FY 1984-1985.

The NRC's emergency preparedness program complements and is coordinated with the emergency preparedness program of FEMA which is responsible for evaluating upgraded emergency response capabilities of state and local governments in support of nuclear power plants. FEMA and the NRC have entered into a Memorandum of Understanding to coordinate the two agencies' responsibilities and efforts in this area so that there is no duplication of effort. FEMA is responsible for evaluating and reporting to the NRC on the adequacy of all state and local planning and preparedness. NRC is responsible for evaluating all licensee planning and preparedness, taking FEMA's determination into account, and determining the adequacy of both on-site and off-site planning.

During FY 1982, a nuclear data link (NDL) prototype program description was developed to allow the NRC to determine whether this approach to collection and analysis of data is consistent with the NRC's emergency role. The first phase of the NDL program will be initiated with the development of a test and evaluation plan by a contractor. A request for proposal has been developed to have a systems integrator available to assist in the development of the NDL prototype. Evaluation of commercially available data acquisition and transmission systems in FY 1983 will provide pertinent technical information, cost data and a better understanding of system applicability to the NRC emergency response role. This information will assist the Commission in making a decision on the final implementation of an NDL system.

The NRC Operations Center is managed and operated on a day-to-day basis by IE. In FY 1983, the NRC Operations Center will be relocated to larger quarters and will be substantially upgraded at the time of the move, with additional improvements scheduled for FY 1984-1985. In addition, IE staff will develop and maintain the NRC Incident Response Program which provides the NRC with coordinated Headquarters and Regional response to incidents.

Program support funds will be used to provide contractual support for evaluation of emergency response plans and licensee exercises and drills, for the NDL development program and for the NRC Operations Center upgrade and operation. operation.

Program support funds increase due to technical support for growth in the operating reactors annual review workload.

Specialized Technical Training	FY 1982	FY 1983	FY 1984	FY 1985
	$1,567	$1,300	$2,309	$1,802
	(19)	(17)	(17)	(17)

The NRC Specialized Technical Training Program is a Headquarters activity which is managed by IE and operated at a site near Chattanooga, Tennessee. This

Inspection and Enforcement Programs - continued

program provides a carefully planned and balanced curriculum tailored to the specific needs of the NRC technical staff. The program consists of courses in reactor construction, health physics, design, codes, technology, and operation of pressurized water reactors and boiling water reactors.

All NRC inspectors, as well as other staff, must be knowledgeable of nuclear facilities, and their associated processes and activities, as well as licensing inspection procedures within their technical purview. Technical training is provided to assure that necessary levels of knowledge are developed and maintained. Although newly hired inspectors are highly qualified individuals, they need specific training to become knowledgeable of the NRC technical and regulatory requirements necessary to perform their duties. Moreover, inspectors must be kept abreast of industry state-of-the-art. Students receive this training through: classroom instruction by NRC instructors; technology and codes courses developed and taught by contractors; simulator training by NRC instructors at TVA's simulator facilities (enabling NRC personnel to obtain "hands on" experience); and programmed self-study training and "off-the-shelf" courses related to inspection.

In FY 1982, 2,270 student-weeks of technical training for IE inspectors and NRC staff were conducted. In FY 1983, 2,800 student-weeks will be conducted, and 2,800 student-weeks are planned for FY 1984.

Program support funds will be used to provide training time on TVA reactor simulators and for contracted courses in reactor design, technology, codes, construction practices and operation, as well as to acquire training aids. Also, funds are for the support associated with maintaining the Reactor Training Center in which the training is conducted and the classrooms and instructors are located.

Staffing resources include instructors, and associated program management and support personnel. Reductions of staffing in FY 1983 will result in increased class size and closer screening of course nominees to select the applicants with the greatest need. Increased funding in FY 1984 reflects increased TVA simulator rates, increased simulator time and purchase of a reactor simulator/graphic display trainer with consoles.

Management Direction and Support	FY 1982	FY 1983	FY 1984	FY 1985
	0	0	$50	$50
	(53)	(71)	(71)	(73)

The resources reflected above are used to provide overall support to Inspection and Enforcement Programs. For IE Headquarters, it includes the Office of the Director and the Headquarters administrative staff. For the Regions, it includes that portion of the Regional office management and administration (Administrators, Division Directors and the indirect portion of the administrative staff) that is allocable to Inspection and Enforcement programs.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Inspection and Enforcement Programs - continued

The Offices of the Regional Administrators are responsible for implementing Inspection and Enforcement programs and for managing the associated assigned resources. The Regional Administrators also serve as the NRC's official representative in their respective geographical areas for Inspection and Enforcement matters.

The Regional administrative support staff included in this program provide clerical/administrative support to all Regional staff members (except direct support, which is included in each of the Inspection and Enforcement programmatic decision units).

The administrative staffs perform the following activities:

- Plan, budget, evaluate, and control resource utilization.
- Administer contracts.
- Operate and maintain office-wide management information systems.
- Provide centralized headquarters administrative support (e.g., mail distribution, word processing).
- Respond to Freedom of Information Act requests.
- Conduct studies on alternative policies and programs.

Program support funds included in this program are for information system studies, management studies, and organization effectiveness studies.

Staff resources in FY 1983-1985 increase as the Regions take on new personnel, budgetary and contract functions. Program support funds remain even throughout the planning period.

(Dollars in Thousands, except whole dollars in narrative material; People in Full Time Equivalent)

Nuclear Regulatory Commission - continued

Nuclear Material Safety and Safeguards Programs.....$36,280

Summary of Nuclear Material Safety and Safeguards Programs
Estimates By Function

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Total Program:				
Salaries and Benefits	$12,635	$13,230 1/	$12,840	$12,850
Program Support	20,256	17,020	17,080	16,330
Travel	447	630	850	860
Administrative Support	4,009	4,770	5,510	5,670
Total Obligations	$37,347	$35,650	$36,280	$35,710
People	(326)	(314)	(306)	(304)

The Nuclear Material Safety and Safeguards program support funding requirements have been allocated to major programmatic functions as shown below. These estimates include resources for those functions to be performed by the NRC Headquarters and Regional Offices. The narrative that follows provides justification in support of these requirements.

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Fuel Cycle and Material Safety								
Fuel Cycle Licensing	$ 2,631	37	$ 2,048	38	$ 2,160	36	$ 2,100	38
Transportation Safety	380	15	450	17	500	17	500	17
Materials Licensing	1,008	47	1,000	49	400	47	500	48
Subtotal	$ 4,019	99	$ 3,498	104	$ 3,060	100	$ 3,100	103
Safeguards								
Reactor Safeguards Licensing	$ 1,516	41	$ 922	35	$ 1,070	35	$ 1,255	37
Fuel Cycle Facilities Safeguards Licensing	2,708	36	2,685	32	2,657	30	2,517	28
Safeguards Transportation and Export Licensing	310	20	133	18	163	16	163	16
Subtotal	$ 4,534	97	$ 3,740	85	$ 3,890	81	$ 3,935	81

1/ Includes $310,000 for FY 1983 Pay Raise Supplemental.

(Dollars in Thousands, except whole dollars in narrative material; People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Waste Management								
High-Level Waste Management	$ 7,958	46	$ 6,100	42	$ 6,300	42	$ 6,000	42
Low-Level Waste Management	2,418	28	2,182	29	2,150	24	1,775	23
Uranium Recovery Licensing	1,327	36	1,400	32	1,580	35	1,420	31
Subtotal	$11,703	110	$ 9,682	103	$10,030	101	$ 9,195	96
Management Direction and Support	$ 0	20	$ 100	22	$ 100	24	$ 100	24
Total	$20,256	326	$17,020	314	$17,080	306	$16,330	304

The Office of Nuclear Material Safety and Safeguards (NMSS) is responsible, under the Energy Reorganization Act of 1974, for the health and safety licensing of all domestic NRC-regulated activities except reactor operations and for the total domestic safeguards licensing for all licensees including reactors. In addition, it exercises lead NRC responsibility for the transportation of nuclear materials. The licensing and regulating responsibilities include such cases as the licensing of the national high-level waste repository, independent spent fuel storage facilities, uranium mills, storage of fresh fuel at reactors, and fuel manufacturing plants, as well as a wide range of radioiosotope uses. Safeguards responsibilities include the review and assessment of safeguards against potential threats, thefts and sabotage involving licensed facilities and materials.

To carry out these responsibilities and other statutory requirements, three major programs have been established: Fuel Cycle and Material Safety, Safeguards, and Waste Management. These programs are supported by the Management Direction and Support Program.

Fuel Cycle Licensing	FY 1982	FY 1983	FY 1984	FY 1985
	$2,631	$2,048	$2,160	$2,100
	(37)	(38)	(36)	(38)

The goal is to protect the health and safety of workers and of the public and to protect the environment through the administration of an effective licensing program for fuel cycle plants and the review and approval of remedial actions for formerly licensed and known contaminated sites. This includes: completing licensing cases for new and existing facilities; performing radiological assessments of formerly licensed and suspected contaminated sites; upgrading radiological contingency plans for coping with accidents; improving the efficiency and effectiveness of the licensing process; and formulating and coordinating standards and confirmatory research requirements for resolving fuel cycle issues.

Nuclear Material Safety and Safeguards Programs - continued

The major objectives are:

(1) Complete licensing cases for fuel cycle facilities and remedial actions for contaminated sites, develop and implement improved radiological contingency planning requirements and conduct reviews of operational data and licensee event reports.

(2) Develop regulations, regulatory guides, and technical positions for fuel cycle facilities.

(3) Formulate and assess requirements for standards and confirmatory research and review proposed and ongoing research projects.

The significant accomplishments during FY 1982 were:

(1) Completed 112 licensing cases for fuel cycle plants and facilities; conducted radiological surveys of possibly contaminated sites to evaluate radioactive contamination, and evaluated remedial actions for those sites which are known to be contaminated; completed licensing actions that enabled transfer of the West Valley facility to DOE and reviewed early plans of DOE for conduct of the West Valley high-level waste solidification project, in accordance with P.L. 96-368; developed and implemented improved radiological contingency planning with emphasis on formalizing requirements, implementing requirements, and testing licensee plans; and developed a system for evaluation of licensee operational data and event reports, and integrated findings into the licensing process.

(2) Reviewed regulations for licensing fuel cycle facilities, and developed waste handling alternatives for waste generating institutions.

(3) Formulated and assessed requirements for confirmatory research and standards in support of fuel cycle licensing; evaluated ongoing research projects and reviewed proposed new work; provided input, as appropriate, to NRC's quarterly Abnormal Occurrence Report and incident reports; and evaluated Congressional acts and other mandates for incorporation into the licensing process.

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) At the NRC Headquarters and Regional Offices, complete or provide guidance, support, and overview for approximately 100 licensing cases per year for fuel cycle plants and facilities; continue to conduct radiological surveys of possibly contaminated sites and evaluate remedial actions for those which are known to be contaminated to enable completion of this work in FY 1985; continue consulting with DOE and reviewing its plan for the West Valley high-level waste solidification project; implement, as license conditions, onsite and off-site radiological contingency plans for licensees exhibiting potential for significant impact due to accidents; and maintain a system for evaluation of licensee operational data and event reports, and integrate the findings into the licensing process.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

(2) In FY 1983, initiate development of criteria and standards to provide the basis for generic licensing of dry cask spent fuel storage and continue development in FY 1984-1985; continue development of waste handling alternatives for waste-generating sites.

(3) Continue to formulate and assess research and standards requirements, evaluate ongoing research projects and review proposed new work; and continue to provide input to NRC's quarterly Abnormal Occurrence Report and any incident reports.

The staffing decrease between FY 1983 and FY 1984 results from a decrease in incoming casework.

Transportation Safety	FY 1982	FY 1983	FY 1984	FY 1985
	$380	$450	$500	$500
	(15)	(17)	(17)	(17)

The goals are to complete licensing cases for package designs and operations for shipment of radioactive materials as required by 10 CFR Part 71 to assure that they meet established NRC standards; to review package certification procedures and package standards; and to develop, maintain, and improve package analysis methods to assure quality and timely reviews.

The major objectives are:

(1) Complete licensing cases for transportation package designs, maintain and improve standardized analysis methods, review licensee quality assurance programs, and maintain a registry of package users.

(2) Develop regulations, regulatory guides, and technical positions for transportation activities.

(3) Assess ongoing transportation activities.

The significant accomplishments during FY 1982 were:

(1) Completed 110 licensing cases for transportation package designs and maintained a registry of users; maintained and improved heat transfer, shielding, and criticality computer programs with various input simplifications for more efficient analysis; and performed 39 quality assurance reviews.

(2) Provided technical support for the review and evaluation of existing regulations.

Nuclear Material Safety and Safeguards Programs - continued

(3) Provided technical and policy input for the Office of Nuclear Regulatory Research's conduct of the transportation Modal Study; and reviewed and commented on suggested changes to International Atomic Energy Agency (IAEA) rules.

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) Complete approximately 110 licensing cases per year for transportation package designs, including new designs, modifications of existing designs, renewals and administrative amendments; continue to maintain a registry of package users; maintain criticality, shielding and heat transfer computer programs and data base required to evaluate package designs; and perform approximately 45 quality assurance reviews per year in FY 1983-1984 and approximately 345 in FY 1985.

(2) In FY 1983, provide input to and assess modal-dependent package performance studies.

(3) Review the proposed revisions to the IAEA transportation regulations scheduled for issue in 1984.

The program support increase between FY 1983 and FY 1984 will be used to update and improve computer programs utilized for package analysis.

Materials	FY 1982	FY 1983	FY 1984	FY 1985
Licensing	$1,008	$1,000	$400	$500
	(47)	(49)	(47)	(48)

The goal is to assure protection of worker and public health and safety through a system of licensing for the possession, use, transfer, and disposal of radioactive material (byproduct, source, and special nuclear material). Achievement of this goal is a joint undertaking between Headquarters and the Regions.

The major objectives are:

(1) Complete licensing cases for radioactive materials licensing in a timely manner so as to ensure safety and prevent delays in essential services, evaluate sealed sources and devices on a continuing basis; conduct licensing site visits on a continuing basis to confirm the validity of licensing actions, and provide technical assistance and training as requested by Agreement States.

(2) Provide technical support for the development of regulations, regulatory guides, and technical positions for materials licensing.

(3) Assess ongoing materials licensing activities.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

The significant accomplishments during FY 1982 were:

(1) Completed or provided guidance, support, and overview for 5,633 licensing cases in a timely manner at NRC Headquarters and Regional Offices; evaluated 104 sealed sources and devices; conducted licensing site visits to confirm the validity of licensing actions; continued to provide assistance and training to Agreement States; and initiated development of a computerized Licensing Management System to provide a support system for materials licensing and to provide information to management regarding the performance of the licensing system.

(2) Participated in the major revision of 10 CFR Part 20, "Standards for Protection Against Radiation;" completed a program to improve methods for evaluating and licensing sealed sources and devices; continued to participate in the study on the effectiveness of the general license concept; continued a study to analyze and improve the materials licensing process; and continued to develop new licensing guides and amendments to regulations.

(3) Continued to coordinate license reviews with the Advisory Committee on the Medical Uses of Isotopes.

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) Complete or provide guidance, support, and overview for approximately 5,500 licensing cases in FY 1983, approximately 5,700 licensing cases in FY 1984, and approximately 5,900 licensing cases in FY 1985 at NRC Headquarters and Regional Offices in a timely manner so as to prevent delays in essential services; evaluate approximately 100 sealed sources and devices per year; conduct licensing site visits to confirm the validity of licensing actions and to determine whether current licensing practices are necessary and sufficient to adequately protect public health and safety with minimum government regulation; provide assistance and training to Agreement State personnel; in FY 1983, evaluate whether NRC should initiate a program for certification of individuals to perform industrial radiography; and continue development of the computerized Licensing Management System to enable completion by FY 1985.

(2) In FY 1983, participate in the study on the effectiveness of current general license regulations for controlling distribution, use, and disposal of devices containing byproduct material; complete the analysis of the materials licensing process; complete a study on consumer products containing radioactive material, and utilize the data base developed in the study to redefine NRC policy on consumer products and to revise regulations, as required; and develop standard licensing review plans to ensure uniformity of review and application of NRC regulations to all licensees. Complete the

Nuclear Material Safety and Safeguards Programs - continued

establishment of model as low as reasonably achievable (ALARA) programs for industrial licensees in FY 1984; review and develop changes to NRC regulations as protection of the public health and safety and changes in NRC policy dictate.

(3) Continue to coordinate license reviews with the Advisory Committee on the Medical Uses of Isotopes; and provide NRC national program management of the materials licensing process by assuring that licensing is conducted in a consistent, effective manner.

The program support decrease between FY 1983 and FY 1984 results from reduced funding requirements for the Licensing Management System.

Reactor Safeguards	FY 1982	FY 1983	FY 1984	FY 1985
Licensing	$1,516	$922	$1,070	$1,255
	(41)	(35)	(35)	(37)

The goals are to assure the protection of the public health and safety and promote the common defense and security through licensing reactor safeguards.

The major objectives are:

(1) Complete safeguards licensing cases for reactor facilities.

(2) Develop safeguards regulatory policy and practices for reactor facilities.

The significant accomplishments during FY 1982 were:

(1) Completed 351 safeguards licensing cases for power and nonpower reactors; completed two licensing cases to implement IAEA safeguards at selected U.S. reactors in accordance with the requirements of the US/IAEA agreement; evaluated and assessed the effectiveness of the physical protection system implemented at one reactor facility; developed safeguards review plans for use in licensing of reactor facilities.

(2) Provided policy guidance and technical support to develop, prepare and improve regulations affecting safeguards at power and nonpower reactor facilities; and provided consultation to the IAEA in support of U.S. efforts to strengthen IAEA safeguards and to implement the US/IAEA Safeguards Agreement.

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) Complete or provide guidance, support, and overview for approximately 380 safeguards licensing cases for power and non-power reactors at NRC Headquarters and Regional Offices in FY 1983, approximately 410 licensing cases in FY 1984, and approximately 480 licensing cases in FY 1985, which will include the review of contingency, guard training and 10 CFR Part 73.55

Nuclear Material Safety and Safeguards Programs - continued

security plans; complete approximately two safeguards licensing cases per year to implement IAEA safeguards at selected U.S. reactors; evaluate and assess the regulatory effectiveness of safeguards rules and programs at about five reactor facilities in FY 1983 and at about six reactor facilities per year in FY 1984 and 1985.

(2) Resolve generic safeguards policy and technical issues; incorporate required changes in the regulatory base and review rules for appropriate cost effective modifications; provide consultation in support of U.S. efforts to strengthen and implement IAEA safeguards; and in FY 1984 provide program support for the Remote Continual Verification of International Nuclear Safeguards Sensors (RECOVER) System.

The funding increase between FY 1983 and FY 1984 is due to the RECOVER program.

Fuel Cycle Facilities	FY 1982	FY 1983	FY 1984	FY 1985
Safeguards Licensing	$2,708	$2,685	$2,657	$2,517
	(36)	(32)	(30)	(28)

The goals are to assure the protection of the public health and safety and promote the common defense and security through licensing fuel cycle facility safeguards.

The major objectives are:

(1) Complete safeguards licensing cases for fuel cycle facilities.

(2) Develop safeguards regulatory policy and practices for fuel cycle facilities.

The significant accomplishments during FY 1982 were:

(1) Completed 202 licensing cases for fuel cycle facilities, which included physical security plan reviews and material control and accounting (MC&A) plan reviews; completed one safeguards licensing case to implement IAEA safeguards at selected U.S. fuel cycle facilities; performed safeguards regulatory effectiveness activities related to fuel cycle facilities; supported operation of the Nuclear Materials Management and Safeguards System (NMMSS); performed MC&A data analysis of several fuel cycle facilities; updated and developed licensing review criteria.

(2) Provided policy guidance and technical support to develop, prepare and improve regulations affecting safeguards at fuel cycle facilities, such as policy efforts involving reduced regulation of low-enriched uranium and regulatory reform of nuclear material control and accounting for high enriched uranium; and participated in interagency technical activities to strengthen IAEA safeguards and the U.S. program to provide technical assistance to IAEA safeguards.

Nuclear Material Safety and Safeguards Programs - continued

The significant accomplishments planned during FY 1983-FY 1985:

(1) Complete or provide guidance, support, and overview for approximately 220 licensing cases for fuel cycle facilities at NRC Headquarters and Regional Offices in FY 1983 and for approximately 170 licensing cases per year in FY 1984 and FY 1985; complete approximately three safeguards licensing cases per year in FY 1983 and FY 1984 and two in FY 1985 to implement IAEA safeguards at selected U.S. fuel cycle facilities; continue to perform safeguards regulatory effectiveness activities related to fuel cycle facilities; continue to support operation of NMMSS or develop and operate an improved safeguards information system; perform material control and accounting data analysis of fuel cycle facilities.

(2) Resolve generic safeguards issues and incorporate the results into the regulatory base, and support the IAEA Agreement.

The staffing decrease between FY 1983 and FY 1984 results primarily from the reduced number of projected applications in the caseload forecast.

Safeguards Transportation and Export Licensing	FY 1982	FY 1983	FY 1984	FY 1985
	$310	$133	$163	$163
	(20)	(18)	(16)	(16)

The goals are to assure the protection of the public health and safety and promote the common defense and security through licensing the transportation and export of nuclear materials.

The major objectives are:

(1) Complete safeguards licensing cases for transportation and export of nuclear materials.

(2) Develop safeguards regulatory policy and practices for transportation of nuclear materials.

The significant accomplishments during FY 1982 were:

(1) Completed 59 licensing cases for transport of nuclear materials which include strategic special nuclear materials and spent fuel shipment route plan reviews, special nuclear material of moderate and low strategic significance reviews, and physical security plan maintenance reviews; completed 132 licensing cases for export of nuclear materials; completed five foreign country analyses describing the status of IAEA safeguards; evaluated and assessed the regulatory effectiveness of safeguards contingency plans for transportation of spent fuel and strategic special nuclear materials.

(2) Provided policy guidance and technical support to develop, prepare and improve regulations; and developed implementing documentation and technical positions for export reviews.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) Complete approximately 40 licensing cases per year in FY 1983 and FY 1984 and approximately 50 in FY 1985 for transport of nuclear materials which include strategic special nuclear materials and spent fuel shipment route plan reviews, special nuclear material of moderate and low strategic significance reviews, and plan maintenance reviews; complete approximately 130 export licensing cases per year; complete approximately nine foreign country analyses describing the status of IAEA safeguards in FY 1983, approximately four foreign country analyses in FY 1984, and approixmately three in FY 1985; evaluate and assess the regulatory effectiveness of safeguards contingency plans for transportation of spent fuel and strategic special nuclear materials.

(2) Review rules and modify them to achieve increased cost effectiveness; analyze generic policy and technical issues related to safeguards transportation; and develop implementing documentation and technical positions for export reviews.

The staffing decrease between FY 1983 and FY 1984 results primarily from a reduced number of foreign country analyses.

	FY 1982	FY 1983	FY 1984	FY 1985
High-Level Waste Management	$7,958	$6,100	$6,300	$6,000
	(46)	(42)	(42)	(42)

The NRC high-level radioactive waste (HLW) program goal is to provide reasonable assurance that HLW is disposed of without unreasonable risk to the health and safety of the public and in such a manner that the EPA standard for releases to the accessible environment will not be exceeded.

The major objectives are:

(1) Conduct initial NRC activities associated with licensing a high-level waste repository to identify issues and resolve them on a schedule which in the absence of unresolved safety concerns, will not delay implementation of the national program, including: the on-site review of DOE's site screening activities; the detailed technical review of DOE's site characterization reports; and the review of DOE's site characterization activities, including exploratory shaft construction and in-situ testing.

(2) Develop technical and scientific information required for and publish both generic and site specific regulatory guidance (technical positions and regulatory guides).

(3) Evaluate the overall DOE program content and progress; and provide NRC HLW program area management, including participation in interagency activities and NRC high-level waste management related rulemaking and licensing proceedings.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

The significant accomplishments during FY 1982 were:

(1) For basalt: continued to review the DOE site screening investigations, and completed preparation for the NRC staff's analysis of the DOE Site Characterization Report (SCR); this included seven technical program reviews and site visits to identify issues with the site that must be resolved. For domed/bedded salt and volcanic tuff: continued to review the DOE site screening investigations and reviewed site screening documents, and began the development of models for assessing radionuclide transport in welded tuff.

(2) Resolved public comments and completed preparation of the final high-level waste disposal technical regulation (10 CFR Part 60); began development of the format and content guide for the license application Preliminary Safety Analysis Report (PSAR) and provided support to the Office of Regulatory Research in preparing the format and content guide for the Environmental Report (ER); prepared draft technical positions on geochemistry, quality assurance for geotechnical investigations, borehole and shaft seals, and waste package performance.

(3) Continued the assessment of the extent to which DOE's HLW programs are directed at developing the information necessary to comply with 10 CFR Part 60, and continued to provide the results to DOE; conducted an interagency review of the draft EPA standard for the disposal of high-level waste; began consultation with DOE on activities related to the solidification of liquid waste at West Valley; provided comments on the West Valley environmental impact statement; provided comments on the Savannah River defense waste solidification EIS; and provided NRC high-level waste program area management.

The significant accomplishments planned during FY 1983 are:

(1) Continue review of DOE site screening activities; complete the Site Characterization Analysis (SCA) and Director's opinion for the Basalt Waste Isolation Project (BWIP) site; begin process of working with DOE and other interested and affected parties to identify issues which must be addressed in the license application and the data and tests needed to resolve them; begin on-site reviews of site characterization work at the BWIP basalt site; and begin the review of SCR's in preparation of the SCA's and Director's opinions for a tuff and a salt site.

(2) Publish the high-level waste disposal regulation (10 CFR Part 60) and provide technical support for public hearings on the technical rule, if required; prepare draft format and content guide for the PSAR: work with DOE, the States, and the technical community to identify information needs and to resolve issues prior to license application; develop technical information for and prepare technical positions to provide timely guidance to DOE on areas such as waste package post emplacement monitoring, waste package reliability, and benchmarking of radionuclide migration codes; begin development of a license review procedure for construction authorization.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

(3) Maintain an overview of the DOE research and development program; review DOE waste management environmental impact statements; provide NRC high-level waste program area management; and continue review and consultation with DOE on activities related to the solidification of liquid waste at West Valley.

The significant accomplishments planned during FY 1984-FY 1985 are:

(1) Complete tuff and salt Site Characterization Analyses and Director's opinions by end of FY 1984; continue review of DOE site screening reports; provide on-site review and evaluation of DOE's efforts to characterize sites.

(2) Complete preparation of format and content guides for the Safety Analysis Report (SAR); continue to work with DOE, the technical community and the public to develop quality assurance requirements and technical guidance; continue preparation of a license application review plan for construction authorization.

(3) Participate in interagency activities and rulemaking proceedings; review DOE waste management environmental impact statements; and provide NRC high-level waste program area management; and continue review and consultation with DOE on activities related to the solidification of liquid waste at West Valley.

The impact of the Nuclear Waste Policy Act of 1982 on the HLW program is presently being assessed, and the program will be modified as required by the Act.

Low-Level Waste Management	FY 1982	FY 1983	FY 1984	FY 1985
	$2,418	$2,182	$2,150	$1,775
	(28)	(29)	(24)	(23)

The goal is to ensure that low-level waste (LLW) disposal facilities are constructed, operated, and closed in a manner which will protect the public health and safety and the environment.

The major objectives are:

(1) On a continuing basis, complete licensing cases for NRC-licensed LLW operations; as requested by the Agreement States, provide technical support to assist them in carrying out their responsibilities; develop and maintain the capability to assess the health, safety and environmental performance of LLW disposal facilities.

(2) Publish the final regulation (10 CFR Part 61) governing the disposal of low-level wastes by near surface disposal; publish final amendments to the regulation governing the disposal of low-level waste not suitable for near surface disposal; and complete technical positions for regulatory guides to support the regulation and to support amendments to the regulation.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

(3) Assess ongoing LLW management activities, such as the cleanup of Three Mile Island (TMI), waste generation, processing and storage; and provide NRC LLW program area management, including participation in interagency LLW activities.

The significant accomplishments during FY 1982 were:

(1) Provided technical assistance to Agreement States supporting their licensing decisions for LLW disposal facilities: completed an environmental status report for Sheffield closure and stabilization; initiated and participated in settlement negotiations for Sheffield; assisted other NRC branches on licensing cases involving low-level waste; completed two licensing cases for LLW disposal facilities; initiated actions to resolve differences with licensee on Hanford license; continued development of license review procedures and performance assessment capability to be used for health, safety, and environmental assessments.

(2) Completed the final LLW regulation (10 CFR Part 61) and final EIS for the near surface disposal of radioactive wastes; determined the scope and extent of amendments to the regulation to address other than near surface disposal; prepared technical positions for regulatory guides to support the regulation.

(3) Continued characterization and analysis of waste resulting from the TMI accident; continued to evaluate low-level waste generation, processing and storage, to assist waste generators in complying with 10 CFR Part 61 waste form requirements and to prevent disposal problems at LLW disposal sites; participated in interagency LLW coordination activities with DOE, EPA and USGS; and provided NRC LLW program area management.

The significant accomplishments planned during FY 1983 are:

(1) Provide prelicensing guidance to potential applicants; provide technical assistance to Agreement States as requested; complete and maintain the capability to assess the performance of LLW disposal facilities; complete the license review procedures for LLW applications for near surface disposal; assist other NRC branches on licensing cases involving LLW; complete approximately six licensing cases for LLW disposal facilities.

(2) Publish final LLW regulation (10 CFR Part 61) and final EIS for near surface disposal. Develop and complete implementation program for licensee compliance with 10 CFR Part 61. Initiate development of the data base and methodology for amendments to 10 CFR Part 61 and a supplement to the environmental impact statement specifically addressing those low-level wastes that are not suitable for near surface disposal; complete technical positions on near surface disposal for input to regulatory guides; evaluate waste streams to determine levels of radioactivity not of regulatory concern.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

(3) Continue to evaluate unique and significant waste to determine compatibility with 10 CFR Part 61 and to assess acceptability of the wastes at LLW disposal sites; identify sources of low-level waste to assess characteristics and properties of as-generated low-level waste, and to assess the effects of processing and storage on LLW disposal; participate in interagency LLW coordination activities; and provide NRC LLW program area management.

The significant accomplishments planned during FY 1984-FY 1985 are:

(1) Initiate the review of one license application for a new NRC-licensed commercial site in FY 1984 and two applications in FY 1985; provide technical assistance to Agreement States for one application for a LLW disposal site in each year; continue technical assistance to two Agreement States on licensing actions for LLW disposal facilities; maintain and improve capabilities to assess health, safety and environmental performance of LLW disposal facilities; assist other NRC branches on licensing cases involving LLW.

(2) Develop amendments to the low-level waste disposal regulation (10 CFR Part 61), and a supplement to the EIS specifically addressing LLW that is not suitable for near surface disposal in FY 1984 and upgrade and improve the regulation and EIS, as needed, in FY 1985; continue preparation of technical positions for input to regulatory guides; evaluate waste streams to determine levels of radioactivity not of regulatory concern.

(3) Continue to evaluate unique and significant waste; identify sources of low-level waste to assess characteristics and properties of as-generated low-level waste; participate in interagency LLW coordination activities and provide NRC LLW program area management.

The staffing decrease between FY 1983 and FY 1984 results from completion of the near-surface LLW regulation and corresponding regulatory guidance, and decreased efforts to analyze ongoing waste generation.

Uranium Recovery Licensing	FY 1982	FY 1983	FY 1984	FY 1985
	$1,327	$1,400	$1,580	$1,420
	(36)	(32)	(35)	(31)

The goal is to ensure that uranium recovery facilities are constructed, operated, and decommissioned in a manner that protects the public health and safety and the environment. In order to improve responsiveness, the NRC has transferred a major portion of the licensing function to Denver, Colorado since it is more accessible to the uranium recovery facilities.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

The major objectives are:

(1) Complete licensing cases to assure that the preceding goal is achieved which includes activities to perform safety and environmental assessments required to provide the basis for licensing decisions for new uranium recovery operations; perform safety and environmental reviews of license renewal applications; perform safety and environmental reviews of license amendment requests for proposed facility modifications; evaluate compliance with EPA radiation standards (40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Fuel Cycle Facilities, effective December 1, 1980 for milling facilities) and, where necessary, issue license amendments; review operating facilities' safety and environmental monitoring data and NRC inspection reports and issue license amendments where appropriate action is necessary; evaluate DOE remedial action plans, as mandated by Public Law 95-604, Uranium Mill Tailings Radiation Control Act of 1978; and provide technical assistance, as requested by Agreement States with respect to uranium recovery facilities, to assure technically satisfactory Agreement States licensing actions.

(2) Improve the regulatory basis upon which licensing decisions are made.

(3) Provide NRC uranium recovery national program management.

The significant accomplishments during FY 1982 were:

(1) Completed 107 licensing cases for uranium recovery facilities which include new applications, renewals, and amendments; reviewed over 100 monitoring and inspection reports and issued license amendments when appropriate; continued evaluation of the DOE Remedial Action Program; and provided technical assistance for six Agreement State licensing cases.

(2) Continued support for regulatory guide development; provided technical support for research needed to support the licensing program; and assisted in finalizing Agreement State agreements.

(3) Provided NRC uranium recovery national program management to assure an agency-wide coordinated program; and developed implementation plans and initiated actions necessary for establishing the Uranium Recovery Field Office in Denver, Colorado, and decentralizing the licensing function.

The significant accomplishments planned during FY 1983-FY 1985 are:

(1) Complete approximately 75 licensing cases per year for uranium recovery facilities; review over 100 monitoring and inspection reports per year and issue license amendments where necessary; evaluate operating mills' compliance with EPA radiation standards (40 CFR Part 190) and, where necessary, issue license amendments; continue evaluation of the DOE Remedial Action Program; and provide technical assistance for approximately three Agreement State licensing cases per year.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

(2) Continue support for regulatory guide development; in FY 1983 evaluate need for revisions to 10 CFR Part 40, Appendix A, and in FY 1984 revise 10 CFR Part 40 regulations as required to be consistent with EPA standards; provide technical support for research needed to support the licensing program; complete development of license review procedures; assist in finalizing Agreement State agreements; and evaluate the need to develop policy and procedures to simplify NRC license documents.

(3) Complete decentralization of the licensing function in FY 1983; and continue to provide NRC uranium recovery national program management to ensure a coordinated agency program.

Management Direction and Support	FY 1982	FY 1983	FY 1984	FY 1985
	0	$100	$100	$100
	(20)	(22)	(24)	(24)

The goal is to ensure effective and efficient management of NMSS programs. The director develops policy guidance for the Fuel Cycle, Safeguards and Waste Management programs and provides overall management direction based on major program goals and objectives. The Headquarters Program Support staff assists the NMSS Director by reviewing and evaluating integrated NRC program area plans for the Fuel Cycle, Safeguards and Waste Management programs. In addition, Program Support staffs at the Headquarters and the Regional Offices assist the NMSS Director and Regional Administrators by evaluating and assessing the effectiveness with which allocated resources are managed in NMSS programs; by providing resource management, contractual, administrative, and other direct support to the program Division staff; and by coordinating with the EDO staff.

The major objectives are:

(1) Develop policy guidance for the Fuel Cycle, Safeguards and Waste Management programs and provide overall management direction as necessary to achieve NMSS program goals and objectives.

(2) Integrate NRC program area plans for the Fuel Cycle, Safeguards and Waste Management programs, and conduct special independent technical and management evaluations of program resource utilization to ensure that programs are planned and executed in an efficient manner.

(3) Manage the NMSS Program Planning and Status Assessment System (PPSAS) which provides NMSS managers with program and resource planning and status assessment information.

(4) Support NMSS programs by the placement of technical assistance projects with private contractors, DOE laboratories, and other government agencies.

(5) Provide administrative and personnel services required to operate NMSS programs.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Material Safety and Safeguards Programs - continued

The significant accomplishments during FY 1982 were:

(1) Developed policy guidance for the Fuel Cycle, Safeguards and Waste Management programs, provided management direction to resolve issues, and restructured programs as necessary to accomplish the major objectives of NMSS within allocated resources.

(2) Provided the NMSS Director, at his request, independent technical and management assessments of selected technical programs, proposals and other issues which included the proposed annual budget submission, proposed mid-year financial reprogramming, executive program analysis reports, Congressional budget testimony, and responses to Congressional inquiries.

(3) Implemented the full operational capability of the PPSAS reporting subsystem.

(4) Executed 105 non-DOE procurement actions and 152 procurement actions with DOE laboratories.

(5) Provided to the NMSS Director and Divisions required administrative and personnel services which included responding to FOIA requests, controlling suspense items, controlling classified documents, evaluating resumes, and processing personnel action requests.

The significant accomplishments planned in FY 1983-FY 1985 are:

(1) Provide policy guidance and management direction to resolve issues and restructure programs as necessary to accomplish the major objectives of NMSS within allocated resources.

(2) Integrate program area plans for the Fuel Cycle, Safeguards, and Waste Management programs, and provide the NMSS Director and Regional Administrators, at their request, independent technical and management assessments of selected technical programs, proposals and other issues which include the proposed annual budget submission, proposed mid-year financial reprogramming, executive program analysis reports, congressional budget testimony and responses to congressional inquiries.

(3) Continue to manage PPSAS and provide appropriate management information reports to NMSS program managers and the EDO staff.

(4) Execute approximately 100 non-DOE procurement actions per year and the same number per year with DOE laboratories.

(5) Continue to provide required administrative and personnel services.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Commission - continued

Nuclear Regulatory Research $199,740

Summary of Nuclear Regulatory Research Estimates by Function

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Salaries and Benefits	$ 12,560	$ 13,360[1/]	$ 12,130	$ 11,890
Program Support	203,365	190,940	182,400	175,800
Administrative Support	3,702	4,475	4,485	4,875
Travel	660	725	725	725
Total Obligations	$220,287	$209,500	$199,740	$193,290
People	(276)	(275)	(250)	(245)

The Nuclear Regulatory Research program support funding requirements have been allocated to major programmatic functions as shown below. The narrative that follows provides justification in support of these requirements.

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Reactor/Facility Safety								
Reactor & Fac. Eng.	$35,403	54	$37,177	55	$39,800	56	$41,800	56
Facility Operations	12,289	52	12,257	50	14,500	42	16,500	41
Thermal Hydraulic Transients	18,591	8	22,034	9	27,700	10	22,900	10
Siting & Health	10,044	27	8,231	27	8,600	21	9,100	20
Risk Analysis	15,620	53	14,070	54	17,700	47	16,700	46
Subtotal	$91,947	194	$93,769	195	$108,300	176	$107,000	173
Reactor Accidents								
Accident Evaluation & Mitigation	35,592	21	47,692	21	43,900	21	39,700	21
Loss-of-Coolant Accidents	13,029	7	12,854	7	11,000	7	9,700	5
LOFT	42,900	3	15,000	3	0	1	0	1
Subtotal	$91,521	31	$ 75,546	31	$ 54,900	29	$ 49,400	27
Advanced Reactors	$ 7,648	2	9,125	2	9,900	2	9,000	2
Waste Management	12,249	24	12,500	23	9,300	21	10,400	21
Management Direction and Support	0	25	0	24	0	22	0	22
Total	$203,365	276	$190,940	275	$182,400	250	$175,800	245

[1/] Includes $320,000 for FY 1983 Pay Raise Supplemental.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

The Office of Nuclear Regulatory Research has the responsibility and authority under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 to perform regulatory research in support of the nuclear regulatory process and improved reactor safety. A basic objective of the research program is to develop a sound and complete base of technical information on basic safety issues and an independently verified source of safety, health, and environmental information to be used together with information furnished by applicants or licensees as a basis for licensing and regulatory decisions. An important part of this activity is the development of safety data and analytical methods to support Commission rulemaking activities and policy determinations, and formulation of rules and regulatory requirements for Commission consideration. This Office also provides the principal interface between the NRC and other organizations involved in the national standards effort.

Reactor and Facility Engineering	FY 1982	FY 1983	FY 1984	FY 1985
	$35,403	$37,177	$39,800	$41,800
	(54)	(55)	(56)	(56)

Reactor and Facility Engineering activities will provide a basis for evaluating reliability and safety margins of mechanical components and structures, evaluating relative safety of stiff versus flexible piping systems, developing methodologies for evaluating seismic risks, validating methodologies for qualification of mechanical and electrical equipment, investigating the integrity of primary systems such as reactor vessels and steam generators, evaluating non-destructive examination (NDE) procedures and providing safety information for fire protection, aging, and the controlling of normally produced and accidentally released combustible gases and radioisotopes. Additionally, research will be conducted to provide the NRC staff with a basis for evaluating the decommissioning of facilities in a manner that protects the public health and safety.

Research in mechanical and structural engineering is designed to provide information on structures, systems, components, and equipment of light water reactors (LWR). The mechanical engineering program continues to emphasize structural and functional reliability of equipment, such as piping, pumps and valves. Emphasis in structural engineering is directed toward evaluating and ensuring containment integrity, with a lesser effort on the safety of other structures. For example, the Seismic Safety Margins Research Program (SSMRP) is a multidisciplinary effort that is developing mathematical models to realistically define elements that affect the probabilities of radioactive release due to earthquakes.

Nuclear Regulatory Research - continued

The planned FY 1984-1985 accomplishments in the area of response and safety margins of structures and mechanical components will include (1) evaluation of the present criteria for damage induced by broken pipes (pipe whip), (2) evaluation of the response and modes of failure of model steel containments due to pressures beyond design criteria, (3) comparison of the predicted capabilities of concrete containments under static internal pressure against experimental loads, (4) evaluation of stiff versus flexible piping, and (5) completion of the SSMRP in FY 1984 which will provide simplified methods for performing seismic risk analyses on pressurized water reactors (PWRs) and boiling water reactors (BWRs). A major accomplishment will be the completion of probabilistic assessment of Combustion Engineering and Babcock & Wilcox primary system piping load combinations and of General Electric main steamline and recirculation piping load combinations. These results will provide input to recommended changes to Regulatory Guide 1.48 on load combinations and to the development of the recommended load combination criteria for non-containment Category I structures in nuclear power plants.

The equipment qualification program is being undertaken to develop and evaluate methods of qualifying the operability of electrical and mechanical components during and after an accident or earthquake in order to ensure that the plant can be shut down and then maintained in a safe condition. During FY 1984-1985, planned accomplishments are completion of evaluating methodologies for qualification testing of selected limit switches, connectors, cables, transmitters, electric motor prototypes, valve actuators and level switches; completion of initial tests to determine the need to use a single prototype for environmental and seismic qualification; and continuation of research on synergisms, dose rate effects, and on sequential versus simultaneous applications of environmental test parameters.

The research program on LWR primary system integrity will include pressurized thermal shock experiments in FY 1984-1985 to evaluate effects of warm prestressing and upper shelf fracture toughness, and to define acceptable levels of repressurization in accidents. The test results will be used by the NRC in evaluating reactor pressure vessel integrity, especially for the plants with vessels built to older materials specifications. This program will also provide the methods for analyzing actual and postulated overcooling transients such as steam-line break accidents and will help provide the basis for formulating the corresponding regulation regarding material toughness during accidents. Unpressurized thermal shock tests will also be conducted to evaluate the behavior of realistic crack geometries and the effects of cladding during thermal shock transients. Work will be completed on the correlation of fracture toughness between surveillance specimens and the actual pressure vessel wall material. In the same period, an experimental methodology will be validated for the evaluation of low ductile-shelf steel and a unified fracture mechanics methodology will be formulated to analyze elastic and elastic-plastic material conditions to predict failures. This methodology will be used to address uncertainties that exist in current evaluations of reactor vessels under normal operation and accident conditions.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

Research to develop patterns of degradation and tube integrity margins for correlations to tube NDE signals using a retired steam generator will be conducted during FY 1984-1985. NRC will use this information to establish surveillance requirements for operating steam generators.

Testing of large-scale degraded and cracked pipes will continue in FY 1984-1985. The results will be used to validate the safety of such piping in operating plants subjected to water hammer and seismic loadings. Sufficient tests and conclusions should be available in FY 1985 for initial guidance to the licensing staff.

In FY 1984-1985 research in NDE will include the development and evaluation of flaw detection probability coupled with fracture mechanics models for reactor component integrity assessments. Improved synthetic aperture focusing technique - ultrasonic testing (SAFT-UT) having near real-time detection including evaluation and display will be evaluated. Criteria and methodology for on-line monitoring and flaw evaluation using acoustic emission will be developed and evaluated.

Planned accomplishments in fire protection and aging in FY 1984-1985 include (1) completion of research on susceptibility of nuclear power plant control rooms to fire, potential fire damage to components within electrical cabinets, and evaluation of the effectiveness of detection devices and halon fire suppression systems installed within the cabinets, and (2) completion of initial research in the identification of significant aging mechanisms and components that are susceptible to aging effects.

In FY 1984-1985 hydrogen control tests will be completed to determine the effect of multiple ignitions and inhomogeneous gas concentrations on combustion mitigation; analytical model testing will be continued on the effectiveness of LWR engineered safety features for control of fission products; visual nondestructive and destructive examination of dry store spent fuel will be continued; and studies will continue on various types of reactors being decommissioned.

Facility Operations	FY 1982	FY 1983	FY 1984	FY 1985
	$12,289	$12,257	$14,500	$16,500
	(52)	(50)	(42)	(41)

Facility Operations is primarily concerned with operationally oriented safety issues. The potential for hardware failures and human-error related incidents has highlighted the need to provide the NRC with independently generated information on which to reevaluate regulations and licensing criteria on reactor operator qualifications, maintenance procedures, and instrumentation and control needs. The technical basis for the application of human factors

engineering to nuclear technology must be further developed to adequately support current and anticipated regulatory needs such as control room reviews, operational aids, licensee qualifications, plant procedures, and human reliability. These areas include human performance modeling, measurements and data, analytical methods, assessment of current designs, and design and evaluation criteria. Improved quantitative estimates of human reliability are needed to help reduce the large uncertainties in risk analyses. Efforts in FY 1984 on human engineering will complete assessment of design standards for reactor control rooms and validation of operator training requirements. A critical review of the basic human factors engineering data underlying existing human factors display requirements will be completed. Research will continue to define a comprehensive operator training program (including simulator training) based upon validated education and training requirements. Research on procedures will be conducted to provide data and analyses on human factors considerations. Data to support decision-making criteria for emergency preparedness will be developed, including evaluation of emergency radionuclide monitoring instrumentation.

Throughout FY 1984-1985 instrumentation and control research efforts will continue to improve and confirm the availability of reactor instruments to minimize the probability of abnormal operation and to mitigate the consequences of an accident. Research on functional requirements and design criteria for control instrumentation will continue, including analyses of potential off-normal events and the effects of various postulated equipment failure modes. Research will address the evaluation of important instrument components, diagnostic methods, the evaluation of programmable digital computer-based protection and control systems, and an evaluation of the feasibility and value of prioritizing plant alarms.

Identified problems in occupational radiation protection are: an increase of 35% in the occupational collective dose in the nuclear power industry and recent data demonstrating that current health physics measurements are not accurate enough to allow adequate evaluation.

The FY 1984-1985 occupational radiation protection program will examine minimizing the radiological effects of the buildup of radioactivity in nuclear power plant components, the effectiveness of techniques for removing this radioactivity and the impact of these techniques. The degree of protection provided by various respiratory protection devices will be experimentally determined, and performance requirements for air samplers will be developed. Preparations for the accreditation of bioassay laboratories and for the certification of health physics survey instruments will be continued. Requirements for beta radiation measurements will be developed. Development of analytical methods for establishing dose criteria which minimize both the protection cost and the health effects cost will be initiated.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

Safeguards efforts in FY 1984-1985 will give priority to research to reduce the vulnerability of operating reactors to insider sabotage and to characterize the human factors of safeguards interactions with safety, particularly during safety emergencies. Research to support the review of safeguards considerations in licensee applications for Independent Spent Fuel Storage Installation (ISFSI) will be completed.

Thermal Hydraulic Transients	FY 1982	FY 1983	FY 1984	FY 1985
	$18,591	$22,034	$27,700	$22,900
	(8)	(9)	(10)	(10)

Thermal Hydraulic Transients research provides experimental data and analytical methods to assess the behavior of nuclear power plants during complex system transients and small-break loss-of-coolant accidents (LOCA), and to provide a more realistic basis for regulation. The program will also provide a technical basis for rulemaking on degraded core cooling by providing an understanding of system transient response and defining those conditions under which severe fuel damage may occur. The program includes (1) testing of engineering models of reactor systems and components to better understand and confirm how nuclear power plants behave during accidents, (2) measuring emergency core coolant flow distribution, and (3) incorporating the resulting experimental data into "best estimate" analytical models and computer codes to improve capabilities for predicting the behavior of nuclear power plants during accidents.

The Thermal Hydraulic Transients experimental program consists of larger scale integral tests, supplemented by smaller scale separate effects tests. Support for this program is provided for NRR licensing actions, investigation of safety concerns, code development, and code assessment. There are two integral tests facilities: Semiscale for PWRs located near Idaho Falls, Idaho, and Full Integral Systems Test (FIST) for BWRs located in San Jose, California. Semiscale is an electrically heated test loop which performs PWR transient and break experiments. The FY 1984 Semiscale program includes completion of secondary-side upset series; experiments based on scenarios identified by risk analysis; and anticipated transients without scram (ATWS). FY 1985 plans include continued research on small-break LOCA performance tests, and special tests as requested by NRR to provide information toward the solution of licensing problems.

FIST is a scale model of a BWR designed to simulate BWR behavior for a wide variety of accidents and transients. The FIST program is jointly funded by the NRC (42%), the Electric Power Research Institute (EPRI) (33%), and the GE, (25%). The first phase of testing will be completed in FY 1983. A second phase of testing will be conducted in FY 1984 with analysis extending into FY 1985. Throughout FY 1984-1985, researchers from the FIST program will be

involved in the BWR transient reactor analysis code (TRAC) improvement effort. BWR TRAC will be used extensively to plan and predict tests. Based on the results of these tests, assessments of the BWR TRAC code and recommended improvements to the code will be developed.

A newly modified facility (B&W's GERDA facility at Alliance, Ohio) with capabilities similar to the current Semiscale facility, but which simulates B&W PWR configurations based on modifications to the existing test apparatus, is scheduled to be assembled during FY 1983-1984 and for start up testing and selected small break LOCA tests in FY 1985. The major portion of the requested increase in FY 1984 is to provide for construction/ modification support for the planned facility. Industry participation in this new program dealing specifically with the B&W PWR configurations is currently being explored.

Separate effects and model development programs provide a key link between the integral experiments and codes. These programs provide detailed information that cannot be obtained in integral tests and an understanding of specific phenomenon during a transient or a specific component of the system. Model development efforts also serve to link the experiments and computer codes by analyzing the experiments and converting the data to a form which can be used to develop or assess computer models.

Several major new experimental efforts will be underway during FY 1984-1985. These include: investigations of primary system to secondary system heat transfer and fluid dynamics under transient conditions within steam generators, system transients which could result in pressurized thermal shock, an investigation of the effect of mixing cold emergency core cooling water with hot primary coolant, and a steam generator study, which is to be established on a three party basis involving NRC, the EPRI, and Westinghouse.

Development efforts on PWR and BWR Plant Analyzers will continue through FY 1985, with a demonstration of the PWR Plant Analyzer scheduled for the end of FY 1985. During FY 1985 NRC will also improve the software for the Plant Data Bank and data from several plants will be incorporated into the Data Bank. In addition plant-specific input decks will be generated, checked and applied to analysis of specific transients and safety issues using the Data Bank.

Incorporation of the Severe Core Damage Analysis Package (SCDAP) code MOD 1 into a system framework will be completed and assessed in FY 1984 to provide a best-estimate analytic capability for examining degraded core behavior and accident management.

In summary, the accurate simulation of LWR system behavior is necessary to develop guidelines for operator action and safety system design. This work will also be used to quantify the safety margins in the current emergency core cooling rule (Appendix K).

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

Siting and Health	FY 1982	FY 1983	FY 1984	FY 1985
	$10,044	$ 8,231	$ 8,600	$ 9,100
	(27)	(27)	(21)	(20)

The Siting and Health research program is concerned with developing and implementing research and standards-setting activities related to the siting of nuclear facilities, the assessment of environmental impacts from the siting and operation of nuclear facilities, and protection of health and safety of the public from harmful effects of ionizing radiation in licensed activities. This program provides data relating to seismology, geology, geotechnical engineering, hydrology, and meteorology for the development of regulatory design requirements for nuclear facilities; and information and standards for the protection of public health and safety and workers from potentially harmful effects of ionizing radiation and of radioactive materials used in licensed nuclear activities.

The geology, seismology, hydrology, and meteorology programs provide information for use in the development and confirmation of regulations, standards, and guides which define the design bases for nuclear facility structures, components, and systems to withstand the effects of severe and extreme natural phenomena such as earthquakes, floods, and severe weather events (e.g., tornadoes, lightning). In FY 1984, the seismology and geology program will continue to develop methods for analyzing digital and analog seismic data, to evaluate the tectonic characteristics of the Northeastern and Northwestern United States, to study the Charleston, SC, and New Madrid, MO, seismogenic zones, and to perform initial studies of predictive methodology for soil failures. The hydrology program is concerned with developing design base events and conditions for severe hydrometeorological phenomena, such as floods, in the area of nuclear facility siting.

The health effects program will conduct research and develop standards necessary to ensure that NRC regulations adequately protect the health and safety of the public and workers from potentially harmful effects that could result from the use of ionizing radiation and radioactive materials in licensed nuclear activities. Efforts in FY 1984 include review of NRC radiation protection standards for consistency with the latest scientific data on the biological effects of ionizing radiation and advances in radiation protection philosophy and methodology. NRC will also publish the final rule and issue the necessary guides for implementing a revision of 10 CFR Part 20 (Standards for Protection against Radiation); develop amendments to the medical regulations to simplify

Nuclear Regulatory Research - continued

and clarify 10 CFR Part 32 (Specific Domestic Licenses to Manufacture or Transfer Certain Items Containing Byproduct Material); develop a measurement improvement program for teletherapy and brachytherapy calibrations; and develop rules, guides, and environmental statements on exemptions from licensing of certain medical products with low levels of radioactive material.

During FY 1984-1985, work will continue on the development of information bases and dosimetric methodologies necessary for improving the assessment of individual and population doses and the consequent health risks resulting from environmental, occupational, and medical exposure to radioactive material. Mathematical models and computer codes will be developed (1) to predict morbidity and mortality from exposure to radionuclides from routine releases at nuclear facilities and from nuclear accidents; and (2) to calculate doses and consequent health effects in individuals of all ages. Research will continue to improve the technical bases used in evaluating the health impact of exposure to fission neutrons at occupational dose levels. Support dose-effect studies are needed to clarify extrapolated values for both high-linear energy transfer (LET) and low-LET radiation. Improve the understanding of causal links between low-level radiation exposure and health effects. The data base on the health effects of industrial exposures to thorium will be improved.

Risk Analysis	FY 1982	FY 1983	FY 1984	FY 1985
	$15,620	$14,070	$17,700	$16,700
	(53)	(54)	(47)	(46)

Risk Analysis research is concerned with developing systems analysis and reliability engineering techniques, including risk assessment methodology to apply to assessing the safety of nuclear facilities. This research aids the licensing and inspection staffs to prioritize and resolve safety issues, to prioritize the research efforts, to support major rulemaking, and to help systematize and stabilize regulatory practices. Studies in support of regulatory reform will continue (1) to improve current operation, (2) to use operations research applied to licensee safety assurance practices in design and operation, (3) to perform analyses of the regulatory structure and safety evaluation practices, and (4) to conduct research into alternative techniques of system safety assurance drawn from other industries (e.g., aerospace, defense, electronics, etc.).

The program on risk methodology development is directed toward providing improved analytical tools, procedures, and statistical data to more realistically predict the course of nuclear accident sequences and the

Nuclear Regulatory Research - continued

likelihood of accidents, and to resolve the combinations of component failures that might give rise to accidents in nuclear facilities. Such research is needed to reduce or quantify the uncertainty associated with a broad array of accidents, including multiple failures, systems interactions, and human errors for use in quantitative risk assessment.

Planned efforts in FY 1984 include modeling for risk and reliability analysis, system interaction analysis, common cause failure mechanisms, and uncertainty predictions. Improved mathematical models of system networks will be developed for considering items such as feedback effects, delayed and conditional fault propagation, and partial failures.

Common cause failure mechanisms, such as fire and flood, have proved particularly difficult to deal with in probabilistic risk assessments (PRAs). Efforts to develop models of reactor accident initiation and propagation of fires in nuclear power plants will result in methodology procedures guides. Preliminary guidance will be available in FY 1984 and is intended for use in plant-specific PRA's. It will provide techniques to screen power plants to identify whether fires may constitute a dominant or significant contribution to risk. A second document, to be completed in FY 1985, will provide guidance intended for more intensive analysis. Recent and current research on floods has reinforced the conviction that internally-generated floods pose a greater threat to plant safety than external floods. Current and near-term research is concentrating on common cause analysis methods especially suited to assessing internal and external floods. In FY 1984, research will begin on external flood hazard analysis.

A better understanding of human error potential could be determined if all human errors were reported for analysis. A reporting system similar to the Aviation Safety Reporting System which the National Aeronautics and Space Administration (NASA) provides to the Federal Aviation Agency (FAA) will be considered. Plans for instituting such a reporting system and subsequent report analysis will be developed by FY 1984 and, if acceptable to the NRC and the industry, a pilot implementation will be tried in FY 1985 in coordination with NRC's Office of Analysis and Evaluation of Operational Data.

The Interim Reliability Evaluation Program (IREP) Phase I (Crystal River-3) was completed in FY 1981 and Phase II, with publication of reports, will be completed by the end of FY 1983 (Browns Ferry-1, Calvert Cliffs-1, Millstone-1, and Arkansas-1). As a result of the IREP program, dominant accident sequences will have been identified for a large variety of plant designs and procedures for the use of PRA techniques in IREP-like studies. An analysis of an additional power plant is planned for FY 1983-1985 to improve the IREP methodology in areas of known weaknesses. This study will exercise the augmented IREP procedures, explore methods for incorporating them into overall PRAs, and thoroughly evaluate concerns such as common-cause failures.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

A major area of uncertainty is in estimation of the consequences associated with reactor accidents. A large part of the NRC research program is directed toward improving our understanding of the physical processes associated with reactor accidents. The MELCOR computer code is being developed to utilize these research results to better estimate the consequences and uncertainties associated with accident conditions for reactor risk calculations. By the end of FY 1984, a preliminary version of MELCOR should be available.

In FY 1984, the accident sequence evaluation effort will begin the development of specialized analytical tools using event tree or similar techniques and the fully delineated reactor accident sequences. These tools will be useful for (1) establishing the feasibility and utility of real-time diagnosis and prognosis of accidents in progress for emergency response and planning, and operator training; and (2) developing screening aids that will be useful for incident review, risk outlier plant identification, and inspection/reporting requirements. Fuel cycle safety research will complete development of basic analysis methods for determining LWR fuel cycle facility source terms for major accidents, i.e., fires, explosions, tornadoes, equipment failures, spills, and other criticalities.

Accident Evaluation and Mitigation	FY 1982	FY 1983	FY 1984	FY 1985
	$35,592	$47,692	$43,900	$39,700
	(21)	(21)	(21)	(21)

The Accident Evaluation and Mitigation program provides the NRC with the technical bases for: (1) decisions which are expected to be made in the course of rulemaking proceedings on degraded core cooling, emergency planning, siting, and on minimum engineered safety features; (2) reducing uncertainties associated with present risk assessment studies; and (3) evaluating systems capabilities and engineered features intended to improve LWR safety.

To meet these objectives, research is being conducted to provide data and analytical methods for: (1) the progression and consequences of severe fuel damage accidents, i.e., accidents involving substantial damage to the fuel and/or cladding so that there is significant release of fission products from the fuel, (2) describing the behavior and the consequences of melting of all or part of the core and the response of the containment, (3) defining the

radiological source term released to the environment, i.e., a cataloging of the forms of fission products released from the fuel and understanding their subsequent transport in containment, (4) evaluating and testing severe accident consequence mitigation systems, and (5) coordination within NRC of the NRC/DOE/EPRI/General Public Utilities efforts in obtaining post-accident data from TMI-2 during cleanup operations.

The Severe Accident Sequence Analysis (SASA) program is needed to improve the understanding of reactor accidents and of the operator-machine interface during a broad spectrum of accident sequences and transients, with the goal of developing better strategies to prevent and mitigate severe accidents. Insights into problems are gained by developing and applying best-estimate state-of-the-art codes, rather than by relying on limiting case analyses. The SASA program will provide firm recommendations to determine when a safety action should be automated in preference to operator action, or when strict procedures should be provided in place of operator guidelines based on symptoms. The results of other research programs such as thermal hydraulics and risk analysis are tied together and used in the SASA program.

The SASA program will provide for the development of diagnostic algorithms to be used by the operator to prevent, diagnose, and respond properly to reactor accidents. Major contributions will be made in the following areas in FY 1984-1985: (1) determination of the operator's perception of the reactor state from the information available, (2) the alternative actions the operator might take given various combinations of component failure, (3) the effectiveness of these actions, (4) the allocation of actions between the operator and automatic systems, (5) the usefulness of degraded systems to bring the plant to safe shutdown and (6) the environment in which safety systems will be required to survive. The analysis of transients will be used to develop accident signatures which then can be used to develop symptom-oriented procedures and to improve operator training. The program will develop strategies to prevent core uncovering, arrest the course of the accident after the onset of fuel damage, and preserve the containment after core melt.

Research in the damaged fuel area is dedicated to providing the NRC with both best-estimate and modeling capability to unambiguously assess the risk and consequences of severe reactor accidents. The programs included herein are intended to eliminate or reduce major uncertainties on: (1) models and phenomenology of current risk codes, by benchmarking and validation, (2) Fission Product Source Term during severe accidents, i.e., data under actual degraded core conditions in the test reactor, (3) Hydrogen Source Term and timing of release under accident conditions, (4) fuel-behavior-induced loading imparted to the containment via molten fuel/water interactions, molten fuel/reactor vessel interactions, noncondensible gas generation, and hydrogen combustion or detonations, and (5) generic understanding and applications of the TMI-2 core examination.

Nuclear Regulatory Research - continued

In FY 1984, the Phase I test series in the Power Burst Facility (PBF) on early melt progression studies will be completed, the test results analyzed, and the information gained will be input into the Severe Core Damage Analysis Package (SCDAP), the SASA program, the fission product source term program, the hydrogen program and the MELCOR development and assessment program for improved PRA studies. During FY 1985, one of the contemplated follow-on tests (Phase II) in the power burst facility (PBF) may be performed, using previously irradiated fuel ($\bar{}$45,000 Mwd/t) as in two of the earlier tests. This test will reach significantly higher temperatures (near 5000°F) than the previous tests. A significant level of foreign funding is being sought to help defray the costs of this program. Some funding is already promised which will help with the early tests. Extent of the follow-on tests will depend on the quantity of foreign participation. NRC also anticipates involvement in the in-reactor severe fuel damage test programs in French and Euratom test reactors. NRC is also cooperating with EPRI in source term investigations.

Containment loading information will be obtained to quantify the loading from deflagration of hydrogen and other combustible gases, from steam overpressure caused by rapid quenching of hot core materials, from missiles caused by these phenomena, and basemat melt-through. Uncertainties in accident phenomenology constitute one of the major causes of uncertainty in the use of PRA. This information is required to provide the phenomenological understanding needed to reduce these uncertainties on the nature and magnitude of containment loads which must be accommodated to permit more effective use of PRA techniques.

The hydrogen program will complete the preliminary assessment of flame acceleration in FY 1984 and the large scale proof tests for verification of methods in FY 1985. One of the larger experimental parts of this program is being done in cooperation with EPRI. This is a series of hydrogen deflagration tests in a large vessel on the Nevada test site. The melt facility will provide validation data on basemat melt-through and the formation of aerosols and combustible gases from the core concrete interaction.

The radiological source term for release from containment which is used for assessing the consequences of severe accidents will also be provided with a better basis in FY 1984. It encompasses the release of fission products from damaged and melting fuel and their subsequent transport and distribution and or deposition through the primary reactor coolant system and containment; the release of fission products and nonradioactive aerosols from interactions of molten core materials with the concrete basemat; and the transport behavior of multispecie aerosols. Information from this research will also determine the distribution of radionuclides for (1) assessing the radiation environment for equipment qualification; and (2) fission product and aerosol loads for the design of engineered safety features equipment and mitigation features. Fission product and aerosol transport model verification tests initiated in FY 1981 in the Nuclear Safety Pilot Plan will continue. In FY 1985 testing in the large-scale fission product transport model verification facility will be initiated at MARVIKEN and will continue at PBF. Experiments on radioiodine transport,

filtration, and retention will continue throughout FY 1984-1985. Research will also continue on assessing fission product chemistry under accident conditions. The source term work contained in this activity will be used in reassessing present emergency planning requirements for improving PRA fission product source term models (MELCOR). An important focus of this research in FY 1984-1985 is to confirm the revised best estimate source terms to be developed in FY 1983 (NUREG-0772 Follow-on Study) and to reduce the uncertainties associated with these estimates. All of this work is either in cooperation with or closely coordinated with the Industry Degraded Core (IDCOR) Program, EPRI, and several foreign research groups.

Work in FY 1984 will continue on improved safety systems and will include evaluations analysis and supporting experiments to examine the feasibility, value, and impact of additional features. The evaluations are expected to include systems such as filtered vent containments, hydrogen control systems, and containment heat removal systems. Tests of vent filter components, core retention materials, and equipment survivability under severe accident conditions will support the evaluations. This effort is required to identify those improved safety systems which offer the most cost effective means to reduce risk and to enhance protection for the public.

Loss-of-Coolant Accidents	FY 1982	FY 1983	FY 1984	FY 1985
	$13,029	$12,854	$11,000	$ 9,700
	(7)	(7)	(7)	(5)

This research program provides experimental data and analytical methods to assess the behavior of nuclear power plants during loss-of-coolant accidents (LOCA). The program includes the testing of engineering models of reactor systems and components to better understand and confirm how nuclear power plants behave during accidents and how emergency core coolant flows are distributed; and incorporating the resulting experimental data into analytical models and computer codes to improve capabilities for predicting the behavior of nuclear power plants during loss-of-coolant accidents.

The 2D/3D program will provide information for addressing the evaluation of conservatism in five areas of licensing practice and provide three-dimensional data for code improvement and code assessment. The five conservatisms to be evaluated are emergency core cooling (ECC) bypass phenomena, steam binding effect, subtraction of water during ECC bypass, three-dimensional effects on reflood, and the effect of core blockage during reflood. The 2D/3D program also will contribute three-dimensional data for code improvement and assessment. The 2D/3D program is being conducted under a tri-lateral obligation among the NRC, the Japan Atomic Energy Research Institute (JAERI), and the

Nuclear Regulatory Research - continued

German Federal Republic Ministry of Research and Technology (BMFT), with the latter two contributing the majority of funding. During FY 1982, the three parties have agreed to eliminate certain tests from the German Upper Plenum Test Facility (UPTF) program, with their accompanying analyses, and to limit the needs of NRC-supplied instrumentation. These actions have helped to reduce the total cost under the U.S. contractual obligation and define the test matrix and schedules thereby producing a more predictable program cost for FY 1983-1985.

The slab core test facility (SCTF) Core II will be constructed during FY 1984. The NRC instrumentation for SCTF Core I will be refurbished for use in Core II. The TRAC analysis for SCTF I data will be completed. The effect of flow blockage in the bundle will be examined. During FY 1985, NRC instruments for UPTF will be delivered, and construction of UPTF will be completed. The Core II test series in the German PWR Integral Test facility (PKL) will be completed. During FY 1985, the SCTF Core II test series will be completed, and two-dimensional flow effects in a radial direction under LOCA refill and reflood conditions will be examined. The PKL II data will be analyzed, and flow distribution in the vessel at the end of the blowdown phase of LOCA will be examined.

Analytic work will continue throughout FY 1984-1985 on the pressurized thermal shock issues, especially those transients involving a small-break LOCA and/or a main steamline break. Investigation of the consequences of an intermediate break LOCA will be reported. Analysis of LOCA transients in upper head injection plants will be completed. The WRAP-EM system codes for BWR and BWR LOCA calculations will be completed and provided to the NRC licensing staff.

Completed codes will be applied to LOCA-related safety problems. These applications will cover a range of break sizes, from small breaks through intermediate breaks and including some limited large break studies. These latter studies will include investigation of possible modifications to the current emergency core cooling rule, as well as evaluation model audit studies. The codes to be applied were developed for simulating the phenomena in specialized geometry, such as plants with coolant injection into the upper head, sub-channels with ballooned rods, and containments with structures of various shapes.

Loss-of-Fluid Test	FY 1982	FY 1983	FY 1984	FY 1985
	$42,900	$15,000	0	0
	(3)	(3)	(1)	(1)

The LOFT facility is a unique nuclear test facility to assess the accuracy of computer codes used to analyze accidents in PWRs, to better understand the behavior of PWRs and engineered safety features under accident conditions and the operator actions needed to stabilize and recover the plant, to evaluate improved instrumentation and advanced display systems, and to assist the operator in identifying the accident conditions and taking the best actions to

(Dollars in Thousands, except whole dollars in narrative material;
People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

ensure public safety and plant recovery. The LOFT test program has included anomalous transients and loss-of-coolant accidents with large, intermediate, and small pipe breaks.

An International Consortium, formed in FY 1983 under the auspices of the Organization of Economic Cooperation and Development (OECD) has taken over the responsibility for the management and funding of the LOFT test program. DOE, as owner and operator of the LOFT facility has been given the full financial responsibility for the LOFT program on behalf of the United States Government. The U.S. NRC will continue to participate in the management board in recognition of its large initial contribution to the Consortium from FY 1982-FY 1983 funds and its continuing interest in the test results. Should the Consortium not go forward, the NRC financial contributions through FY 1983 are planned to be used to defray costs of decontamination and decommissioning.

Advanced Reactors	FY 1982	FY 1983	FY 1984	FY 1985
	$ 7,648	$ 9,125	$ 9,900	$ 9,000
	(2)	(2)	(2)	(2)

This program provides the NRC with an independent capability for safety assessment and the development of licensing standards for advanced reactor concepts. The immediate objective is to provide support for the NRC review of DOE's application for the Clinch River Breeder Reactor (CRBR) and generic issues, and to maintain a baseline program within NRC to provide a basis for possible future high temperature gas reactor (HTGR) application review.

Liquid Metal Fast Breeder Reactor

The breeder reactor research program is directed toward providing research results which will support NRC's licensing decisions regarding the CRBR Construction Permit and Operating License applications. The primary objective of this research will be to develop computer codes for licensing analysis, to assess safety issues, and to provide for audit verification of research results submitted in support of the licensing application.

In order to meet these objectives, research is being conducted to assess accident sequences which may lead to core damage or threaten containment integrity, to understand phenomena related to accident, system integrity and aerosol release and transport, and methods to hold down radiological consequences.

Nuclear Regulatory Research - continued

In FY 1984-1985, the analytical program will continue to support CRBR licensing decisions. Validation of the codes will continue to maintain a state-of-the-art capability in CRBR analysis. Scoping studies will be conducted in FY 1984 to investigate the feasibility of a three-dimensional version of the SIMMER code.

The aerosol release and transport program should be completed during FY 1985. Verification for the aerosol codes will then be completed with the main emphasis being a comparison of the codes with benchmark tests. Tests to study the effects of fission products, structure, and other parameters in a sodium environment will be conducted. Associated analytical model development and verification will continue after FY 1985.

The accident energetics program in FY 1984-FY 1985 will consist of a series of experiments in the Annular Core Research Reactor (ACRR) on the relocation of molten fuel and steel from the reactor core under transition phase conditions. Experiments on the performance of molten fuel and cladding at the initiation of an accident and on subsequent coolant channel blockage formation will also be completed. In FY 1984, a series of experiments on the possible propagation of a thermal explosion in a premixed system of molten fuel and sodium will be completed.

High Temperature Gas-Cooled Reactor

Current request provides $2.6 million of research efforts for gas-cooled thermal reactor safety in each of FY 1984-1985. The FY 1984-1985 planning recognizes the industry intent to develop a lead-plant concept (a steam cycle/cogeneration plant) suitable for near industrial zone siting. It also provides the framework for more extensive research to back up NRC licensing of HTGRs which may be undertaken if a specific licensing request is forthcoming. These research efforts also provide NRC support in connection with the operational Ft. St. Vrain HTGR reactor plant in Colorado.

Throughout FY 1984-1985, NRC will perform analytical studies, as needed, to support revisions of the Standard Review Plan and General Design Criteria. The HTGR Safety/ Licensing Handbook (containing HTGR-specific guides, standards, data, and analytical techniques) for NRC evaluations will also be completed. In addition, graphite structural and core material characterizations will continue through FY 1985.

The NRC data base to evaluate HTGR fuel integrity, coating effectiveness, and potential for fission product release under explicit accident transient conditions will be expanded during FY 1984-1985 to enhance interpretation of potential accident consequences for the latest generation HTGRs.

(Dollars in Thousands, except whole dollars in narrative material; People in Full-Time Equivalent)

Nuclear Regulatory Research - continued

Waste Management	FY 1982	FY 1983	FY 1984	FY 1985
	$12,249	$12,500	$ 9,300	$10,400
	(24)	(23)	(21)	(21)

The nuclear waste management research program will provide technical information and develop standards essential for regulating commercial high-level and low-level radioactive waste, as well as mill tailings from uranium recovery operations. The technical information developed by the research program will provide reliable technical bases for NRC regulations, criteria, codes, and regulatory guides, for the support of licensing decisions, and for enforcement of regulations. In addition to supporting NRC regulatory activities, this program will provide technical information to the Agreement States.

The high-level waste research program provides information and analytical capability required to evaluate DOE-proposed methods and sites for the long term disposal of high-level radioactive waste. The evaluation of long term performance must address both the engineered and natural barriers which make up a geologic repository. The NRC evaluation requires a thorough understanding of natural phenomena and geologic processes over long periods of time. The principal elements in this program will be directed toward identifying and evaluating the significant sources of uncertainty in the data and models used to predict the long term performance of the repository to assess compliance with NRC regulations.

The high-level waste research and standards program for FY 1984-1985 will continue to assess the uncertainties associated with methods for predicting (1) the capability of packaged wastes to comply with requirements for long term performance; (2) the effect of geochemical retardation interactions on radionuclides migration in the near field of waste packages, including backfill; and (3) reliability of geotechnical and radiological instruments, measurement strategy, and repository monitoring. The main effort on rock mass and borehole plugging and sealing assessment will be concluded in FY 1984.

The high-level waste program will also develop, evaluate, and demonstrate probabilistic methods necessary for conducting risk assessment for high-level waste and spent fuel repositories in three different geologic media. This program will demonstrate the use of risk assessment methods to identify and prioritize information needs.

The low-level waste research program will include testing of solidified wastes arising from reactor accident clean-up and from the routine decontamination of operating reactors. This program will test the reliability of the characterization of low-level radioactive wastes being produced by decommissioning and decontamination activities. The FY 1984 program will complete tests of physical and chemical stability of volume reduced wastes from controlled air incineration and also complete the assessment of effects of high-level radiation on

organic ion exchange media. This program will establish uniform testing procedures and guidelines for evaluating waste forms and container performance; develop methodology to correlate these laboratory data with waste form performance predictions, and complete field and laboratory studies of existing shallow land burial sites, including sites typical of different geographic regions in FY 1985. These studies will provide bases for standards in the areas of site characterization, facility design, facility operation, monitoring, and site closure.

During FY 1984-1985, regulatory guides will be developed to support 10 CFR Part 61 (Licensing Requirements for Land Disposal of Radioactive Waste), which includes criteria for waste characteristics and performance, site suitability, monitoring, site selection, facility design, operation, and closure for near surface land disposal facilities.

The uranium recovery research program will evaluate engineering designs and methods for managing tailings of operating uranium mills and waste from in-situ mines. Work will continue in FY 1984-1985 on testing and assessment of methods for (1) characterizing geologic/hydrologic parameters of uranium recovery facilities, tailings disposal methods, and in-situ, solution mining operations; (2) predicting hydrological transport of radionuclides; (3) assessing barriers to groundwater contamination; (4) monitoring containment of radionuclides and toxic wastes; (5) ensuring effectiveness of techniques for attenuating radon emanation and stabilizing tailings during mill operations; and (6) predicting the capability of tailings covers to control long term erosion. Results of this research will provide information needed to provide the bases for regulatory guides and to support licensing decisions.

Management Direction and Support	FY 1982	FY 1983	FY 1984	FY 1985
	0	0	0	0
	(25)	(24)	(22)	(22)

The personnel requirements for this area consist of the Director's Office, administration support staff, and the resource control and contract execution staff. This staff provides the Director of Research with assistance and support in the direction and evaluation of complex technical research projects; and plans, coordinates, directs, and executes the business matters of the Office, including contractual agreements, budget formulation, fiscal management, personnel administration, travel assistance, and research coordination with other Offices, industry and foreign governments.

(Dollars in Thousands, except whole dollars in narrative material; People in Full Time Equivalent)

Nuclear Regulatory Commission - continued

Program Technical Support Programs $27,520

Summary of Program Technical Support Programs Estimates by Function

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Salaries and Benefits	$ 15,340	$ 17,300[1/]	$ 16,270	$ 15,850
Program Support	3,206	3,240	3,940	4,040
Administrative Support	4,616	5,190	5,760	6,025
Travel	1,043	1,320	1,550	1,555
Total Obligations	$ 24,205	$ 27,050	$ 27,520	$ 27,470
People	(379)	(389)	(367)	(357)

The Program Technical Support offices are integral to the agency's process of licensing and regulating nuclear facilities and materials for the protection of public health, safety and environment. These programs are the Advisory Committee on Reactor Safeguards (ACRS), the Atomic Safety and Licensing Board Panel (ASLBP), the Atomic Safety and Licensing Appeal Panel (ASLAP), Investigations (OI), Executive Legal Director (ELD), International Programs (OIP), State Programs (SP), and Analysis and Evaluation of Operational Data (AEOD). These programs will continue the conduct of and the legal representation at hearings to license the operation of nuclear power plants. Post-OL activities and assessment of potentially significant nuclear related operational events are emphasized. Staffing decreases from FY 1983 reflect the decreasing number of Operating Licenses to be granted each year. The following addresses the individual programs that provide Program Technical Support.

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
ACRS	$ 313	60	$ 220	58	$ 250	56	$ 250	55
ASLBP	-	64	100	61	100	53	80	46
ASLAP	-	20	40	19	40	17	40	16
OI	-	21	-	42	-	38	-	38
ELD	60	113	60	111	60	106	60	106
OIP	2	31	100	29	150	28	150	27
SP	721	38	720	34	730	34	730	34
AEOD	2,110	32	2,000	35	2,610	35	2,730	35
Totals	$ 3,206	379	$ 3,240	389	$ 3,940	367	$ 4,040	357

a. The Advisory Committee on Reactor Safeguards (ACRS) established in 1957 by Statute, advises the Commission on potential hazards of proposed or existing reactor facilities and the adequacy of proposed safety standards. Section 29

1/ Included are $400,000 for FY 1983 pay raise supplemental.

Program Technical Support Programs - continued

of the Atomic Energy Act of 1954 also requires that the ACRS advise the Commission with respect to the safety of operating reactors, and Public Law 95-209 requires an annual report to the Congress on the NRC Safety Research Program. The ACRS reviews requests for preapplication site and standard plant approvals; applications for construction permits and operating licenses for production and utilization facilities; amendments to operating licenses for power reactors, test reactors, spent fuel reprocessing plants and waste disposal facilities; and assists in matters related to DOE nuclear facilities as outlined in the Memorandum of Understanding dated February 24, 1978.

b. The Atomic Safety Licensing Board Panel (ASLBP) is by statute the principal adjudicatory office of the NRC. Three-member Boards drawn from the Panel conduct adjudicatory hearings pursuant to the Administrative Procedure Act, the Atomic Energy Act and the National Environmental Policy Act. Boards hear and decide issues granting, suspending, revoking or amending licenses to construct and operate nuclear power plants and other nuclear facilities. Hearings address matters such as health, safety, environment, economic considerations, including civil penalties, and antitrust. Currently, the Boards' workload includes a large number of cases involving applications by utilities for nuclear power plant operating licenses. In addition, the ASLBP conducts any other proceedings which the Commission may direct or the regulations of the agency may require.

c. The Atomic Safety and Licensing Appeal Panel (ASLAP) is administratively established and requires Congressional notification of any revision to the organizational structure of the panel. In three-member Appeal Boards, the ASLAP reviews all initial decisions and certain interlocutory orders of Administrative Law Judges and Atomic Safety and Licensing Boards in proceedings on license applications for production and utilization facilities (under 10 CFR Part 50) and such other proceedings as the Commission may specify. The ASLAP holds appellate reviews according to the applicable provisions of the Commission's rules of practice.

d. Investigations was reorganized and an independent office established in FY 1982 to conduct, supervise and provide quality control for investigations of licensees, applicants, contractors and vendors including investigations of all allegations of wrong doing by other than NRC employees. Quality control procedures are being developed, administered and maintained to oversee the initiation, conduct and supervision of all inquiries and investigations. The IE and Regional inspection program is monitored to determine possible areas for investigations. Systems and procedures are being established to ensure that appropriate organization components of NRC are promptly notified and fully informed of those matters under investigation which may affect public health and safety and other aspects of the NRC mission.

e. The Executive Legal Director (ELD) is responsible for providing legal advice and services to the Executive Director for Operations and to offices which report to that official. The diverse responsibilities of ELD are performed by four divisions: Hearing Division, Regulations Division, Regional Operations and Enforcement Division and the Operations and Administration

Program Technical Support Programs - continued

Division. ELD provides legal representation of the NRC staff at administrative proceedings involving the licensing of nuclear facilities and materials, enforcement actions and rulemaking. Legal advice and services are provided at Headquarters and in the Regions for health and safety, environmental impact and antitrust aspects of licensing and regulation; research programs; general agency administration, including contracts, patents, personnel, security and labor relations; safeguards and waste management programs; and the export/import licensing program. This office has a major role in nuclear power plant amendment proceedings, which have increased with the addition of on-line nuclear power plants.

f. International Programs (OIP) was established in 1976 to develop and direct a program of cooperation with foreign regulatory agencies and to administer the Commission's responsibilities in the areas of non-proliferation, international safeguards, nuclear exports and imports. OIP keeps the Commission and staff informed about international matters, maintains liaison with other U.S. agencies, and is key to facilitating the exchange of nuclear health and safety related information between the U.S. and foreign countries. It reviews, processes and issues licenses for export of nuclear reactors, fuel and components; consults with the Departments of Energy and Commerce on nuclear related exports which they approve; coordinates the policy aspects of NRC's international safeguards and physical security activities; participates in implementation of the U.S./IAEA safeguards agreement; and is the liaison to the U. S. Intelligence Community for nuclear related intelligence matters.

g. State Programs (OSP) was established in 1976 to develop and direct a program of cooperation and liaison with states, local governments and interstate organizations. The office administers the State Agreements program established under the provisions of Section 274 of the Atomic Energy Act of 1954, as amended. Twenty-six Agreement States now administer about 12,000 licenses involving the use of radioactive materials in medicine, industry, training and research. OSP and the Regions provide liaison to states and state-related organizations; provides training and assistance to state and local governments in radiation control; and coordinates these efforts with other NRC offices and U.S. Government agencies having state and interstate responsibilities. As required by the Atomic Energy Act the Office and the Regions perform periodic reviews of Agreement State radiation control programs, including regulation of uranium milling and low level waste, to determine their adequacy to protect health and safety and compatability with the NRC program. OSP administers the Price-Anderson indemnity and nuclear property insurance programs for nuclear facilities; performs financial qualifications reviews in limited circumstances and studies of financing decommissioning of nuclear facilities; and administers the program for transferring to states the responsibilities for need for power reviews.

h. Analysis and Evaluation of Operational Data (AEOD) collects, stores, analyzes, evaluates, and feeds back information on operational experience to identify significant events and situations that warrant detailed examination. These events and situations are further evaluated to determine what problems should be corrected. The office has the lead responsibility for coordinating

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Program Technical Support Programs - continued

the NRC operational data analysis program, developing reporting requirements for operational events, and developing computerized systems for the storage and retrieval of operational experience data.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Regulatory Commission - continued

Program Direction and Administration Programs $40,860

Summary of Program Direction and Administration Programs Estimates by Function

	Actual FY 1982	Estimate FY 1983	Estimate FY 1984	Estimate FY 1985
Salaries & Benefits	$ 26,729	$ 26,580[1/]	$ 26,200	$ 26,130
Program Support	939	2,990	3,040	3,040
Administrative Support	9,346	9,175	10,850	11,680
Travel	537	665	770	770
Total Obligations	$ 37,551	$ 39,410	$ 40,860	$ 41,620
People	(790)	(731)	(722)	(720)

Program Direction and Administration (PDA) offices collectively provide overall policy direction, resource management, administration and logistic support for the agency. These functions undergo a continual management review for improvement in efficiency and effectiveness. The program reductions are in keeping with the Administration's efforts to reduce staffing costs. The following staff offices of the Commission and the Executive Director for Operations (EDO) are included:

The Commission:
Commission (OCM)
Secretary (SECY)
Inspector and Auditor (OIA)
General Counsel (OGC)
Public Affairs (OPA)
Policy Evaluation (OPE)
Congressional Affairs (OCA)

EDO:
Executive Director for Operations (EDO)
Small & Disadvantaged Business Utilization and Civil Rights (SDBU/CR)
Resource Management (RM)
Administration (ADM)

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
OCM	$ 2	32	$ 10	32	$ 100	32	$ 100	32
SECY	659	39	1,020	36	1,000	36	1,000	36
OIA	-	27	-	29	-	28	-	28
OGC	14	26	25	29	5	29	5	28
OPA	2	17	4	18	4	17	4	17
OPE	45	16	195	18	215	18	215	18
OCA	-	8	1	9	1	9	1	9
EDO	50	18	100	21	100	21	100	21
SDBU/CR	6	8	90	9	90	8	90	8
RM	153	146	1,545	137	1,525	132	1,525	132
ADM	-	453	-	393	-	392	-	391
Totals	$ 931	790	$ 2,990	731	$ 3,040	722	$ 3,040	720

[1/] Included are $620,000 for FY 1983 pay raise supplemental.

Program Direction and Administration Programs - continued

a. The Office of the Commissioners (OCM) is the governing body which must exercise the overall NRC responsibilities of the Energy Reorganization Act of 1974 and the Atomic Energy Act of 1954, as amended. This body provides fundamental policy guidance and administration and management direction necessary to assure 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.

b. The Office of the Secretary (SECY) develops policies and procedures for secretariat services for the conduct of Commission business and implementation of Commission decisions; advises and assists the Commission and staff on the planning, scheduling and conduct of Commission business; prepares for and records Commission meetings in accordance with requirements of the Sunshine Act; provides management and administrative guidance on preparation and submission of Commission staff papers to include monitoring the status of all items requiring action; maintains a forecast of matters for future Commission consideration; processes and controls institutional correspondence; maintains the Commission's official records; controls the handling and service of documents issued and received in all adjudicatory matters and public proceedings; administers the NRC Historical Program; provides personnel, administrative and logistical support services to the Commission and other NRC offices located in Washington, D.C.; and supervises and administers the NRC Public Document Room to maintain and provide to the public regulatory information, reference services and access to docket material pertaining to NRC regulatory and adjudicatory activities.

c. The Office of Inspector and Auditor (OIA) functions as the Agency Inspector General and is responsible for developing policies and standards that govern the financial and management audit program; planning, directing and executing the long-range comprehensive audit program; conducting and reporting on investigations and inspections, as necessary, to ascertain and verify the facts with regard to the integrity of all agency operations, employees, organizations, programs and activities; referring suspected or alleged criminal violations to the Department of Justice (DOJ); administering the Commission's "open door" policy; serving as point of contact with the General Accounting Office (GAO); and maintaining liaison with GAO, DOJ and other audit and law enforcement agencies.

The objective of OIA is to provide the Commission with an independent review and appraisal of programs and operations to assure that responsibilities are discharged with effectiveness and efficiency; and to provide a capability to verify facts to assure continued maintenance of the highest standards of integrity of all NRC organizations, programs and activities. A continuous effort is made to eliminate waste, fraud and inefficiency.

d. The Office of the General Counsel (OGC) is the chief legal advisor to the Commission. The General Counsel provides legal advice to the Commission in connection with the quasi-judicial responsibilities of the Commission and in the development of substantive policy matters. It represents the Commission in Courts of Appeal proceedings to review Commission orders and, in cooperation with the Department of Justice, represents the Commission in court proceedings affecting the NRC program in the Federal District Courts. The office also provides legal advice with respect to legislative matters of

Program Direction and Administration Programs - continued

concern to NRC, including drafting of legislation, preparation and review of testimony and preparation and transmission of statements of views requested on proposed legislation.

e. The Office of Public Affairs (OPA) issues public announcements from both headquarters and the regional offices; responds to telephone inquiries from the news media and the public; and responds to letters from the media and the public, including the bulk of the NRC referrals from the White House. In addition, OPA arranges press conferences in the Washington area as well as in the regions in the vicinity of nuclear facilities, coordinating requests for Commission speakers before civic groups and other organizations interested in the role of the NRC. The office also assists the licensing boards, the appeal boards and the Advisory Committee on Reactor Safeguards wherever hearings and meetings are held in which a high degree of public and press interest is evidenced; advises the Commission and senior NRC staff on public affairs impacts of planned programs and other activities; and advises and assists the Commission and the public on the conduct of public meetings and rulemaking hearings of broad general interest.

f. The Office of Policy Evaluation (OPE) advises the Commission on a broad range of substantive policy matters to enhance the information base on which Commission decisions are made. The office provides the Commission with an independent evaluation of program policy objectives; reviews staff papers, provides independent technical evaluation of issues presented to the Commission, including cases under adjudication; and contributes technical and policy advice for projects being conducted and managed by other NRC offices or outside agencies.

g. The Office of Congressional Affairs (OCA) assists and advises the Commission and senior staff on Congressional matters, coordinates agency Congressional relations activities and is the principal liaison for the Commission with Congressional committees and members of Congress.

The primary objective of the office is to assure that the Congress is kept fully and currently informed of NRC activities as required by Section 202 of the Atomic Energy Act of 1954, as amended. The office provides the Commission and senior NRC staff with relevant and current information as to major legislative activities likely to effect NRC. Additionally, the office seeks to assure that individual members of Congress are kept currently and adequately informed of significant NRC licensing activities that impact on their respective states and districts.

h. The Executive Director for Operations (EDO) supervises and coordinates operational activities and policy development of both line and staff offices and implements the Commission's policy directives pertaining to these offices. The office consists of the Executive Director, the Deputy Executive Director for Regional Operations and Generic Requirements, their immediate staffs and the Administrative and Correspondence Branch which is responsible for the assignment, review and coordination of all correspondence.

i. The Office of Small and Disadvantaged Business Utilization and Civil Rights (SDBU/CR) is responsible for the implementation and execution of the functions and duties under Sections 8 and 15 of the Small Business Act, as

amended; and those functions and duties related to equal employment opportunity and civil rights matters within the NRC.

Major objectives of the office are to locate both small and small disadvantaged businesses capable of performing NRC contractual requirements and provide information to such firms interested in NRC programs and contracting procedures; increase employment of minorities and women in the agency; promote continued growth of Upward Mobility Programs; and assure a climate for improved employee morale by promoting and maintaining counseling activities and supporting advisory committees made up of special emphasis groups.

j. The Office of Resource Management (RM) was established during FY 1982 by consolidating the Office of the Controller and the Office of Management and Program Analysis. This new office provides budgetary and fiscal management for the NRC, including the development and maintenance of a financial control system and a system of accounting designed to conform to the standards prescribed by the Comptroller General; management information and analyses for a variety of users within the NRC; and develops and maintains the agency's key management information and centralized automatic data processing systems including word processing. It provides analyses to assess the relationship between program workload and resource allocation; collects, reviews and issues various periodic and special reports on radiation exposure data reported by licensees for use by NRC offices, Congress, other parts of the government and the public at large; and manages and coordinates special projects including Congressionally mandated reports such as the NRC Annual Report. Beginning in FY 1983 a cost analysis group will provide cost estimates which could result from proposed NRC regulatory requirements. These estimates will be used in cost/benefit analysis determinations.

k. The Office of Administration (ADM) is responsible for personnel administration; security of facilities and the safeguarding of classified and sensitive unclassified information; document control; agency-wide training; facilities and materials license fees; contracting and procurement; transportation services; telecommunication services; rental of space; administration of Freedom of Information Act requests; printing and reproduction; records management; Privacy Act requests; support for 152 local public document rooms; managing the Headquarters Administrative Support funds; agency-wide interviewee and change-of-duty station travel as well as a variety of other administrative functions.

The substantive work of ADM is performed by the Management Development and Training Staff, the License Fee Management Branch, the Program Support Branch, and the following six operating divisions: Organization and Personnel, Security, Facilities and Operations Support, Technical Information and Document Control, Rules and Records, and Contracts.

(Dollars in Thousands, except whole dollars in narrative material;
People in Full Time Equivalent)

Nuclear Regulatory Commission - continued

Consulting Services

Account Title	Type	Obligations (in thousands) FY 1982	FY 1983	FY 1984	FY 1985
Nuclear Reactor Regulation	Contractual Services	$ 45	$ 80	$ 80	$ 80
	Personnel Appts.	15	25	25	25
	Advisory Committee Consultants	-	-	-	-
	Total	$ 60	$105	$105	$105
Inspection and Enforcement	Contractual Services	$ -	$ -	$ -	$ -
	Personnel Appts.	5	5	5	5
	Advisory Committee Consultants	-	-	-	-
	Total	$ 5	$ 5	$ 5	$ 5
Nuclear Material Safety and Safeguards	Contractual Services	$ -	$ -	$ -	$ -
	Personnel Appts.	37	70	70	70
	Advisory Committee Consultants	7	30	30	30
	Total	$ 44	$100	$100	$100
Nuclear Regulatory Research	Contractual Services	$ -	$ -	$ -	$ -
	Personnel Appts.	7	6	6	6
	Advisory Committee Consultants	-	-	-	-
	Total	$ 7	$ 6	$ 6	$ 6
Program Technical Support	Contractual Services	$ -	$ -	$ -	$ -
	Personnel Appts.	5	5	-	-
	Advisory Committee Consultants	130	170	180	180
	Total	$135	$175	$180	$180
Program Direction and Administration	Contractual Services	$100	$100	$100	$100
	Personnel Appts.	88	78	80	80
	Advisory Committee Consultants	-	-	-	-
	Total	$188	$178	$180	$180
Total Nuclear Regulatory Commission	Contractual Services	$145	$180	$180	$180
	Personnel Appts.	157	189	186	186
	Advisory Committee Consultants	137	200	210	210
	Total	$439	$569	$576	$576

Consulting Services - continued

MAJOR PROGRAM AREAS

NUCLEAR REACTOR REGULATION	Consulting services provide technical advice on highly complex and controversial areas on an intermittent basis for the regulation and licensing of nuclear power plants. This advice is concentrated primarily on SEP integrated plant safety assessment reports; and occupational dose reduction.
INSPECTION AND ENFORCEMENT	Consulting services are used to develop evaluation methods, conduct surveys, provide recommendations for upgrading the professional level of IE inspectors for the Reactor Training Center and to continuously review and update on-the-job training journals.
NUCLEAR MATERIAL SAFETY & SAFEGUARDS	Consulting services are used to provide: technical advice on fuel processing operations, including high level waste solidification activities; advice on review of critical technical data associated with repository site performance and evaluation; and assistance to staff in evaluating LLW generation, processing and storage from disposal perspective to ascertain long term burial ground performance. The FY 1983 consulting expenditures are not representative of NMSS requirements because NMSS usage of consultants was constrained by the agency limitation on OPFT resources. Advisory Committee expenses include the Advisory Committee on Medical Uses of Isotopes which considers medical questions referred to it by NRC staff and renders expert opinion regarding medical uses of radioisotopes and advises NRC staff on matters of policy.
NUCLEAR REGULATORY RESEARCH	Research uses the advice of consultants to supplement the expertise of its staff. Such advice is required in a wide variety of technical areas associated with nuclear power research and standards development work, e.g., epidemiology, radiation health effects, etc. The employment of consultants on an ad hoc basis allows Research to obtain needed advice without increasing its permanent technical staff. The slight drop in estimated consultant use for FY 1983/84/85 is based on the expected drop in the overall RES budget for these years.

Consulting Services - continued

MAJOR PROGRAM AREAS - continued

PROGRAM TECHNICAL SUPPORT	Consultants provide assistance to an assignment concerned with expediting the hearing process. This advice will be completed in FY 1983. Advisory Committee consultants assist the membership of the Advisory Committee on Reactor Safeguards (ACRS) established by statute in 1957. The ACRS advises the Commission on potential hazards of proposed or existing reactor facilities and prepares a report to Congress as required by Public Law 95-209 on the NRC Safety Program.
PROGRAM DIRECTION & ADMINISTRATION	Consultants advise the agency on such issues as evaluating the implementation of those elements of the Civil Service Reform Act which apply to NRC; salary and applicant availability surveys of the nuclear engineering labor market; evaluating the fringe benefit requirements of the Resident Inspector Program in light of legislative relief which may be provided by Congress; data studies required in defense of class action suits; validation of selection procedures in defense of allegations under the Uniform Selection Guidelines; evaluating the applicability of a data processing system for recruitment and selection records; and linking the Payroll Data System to the new Personnel Data System.

U. S. NUCLEAR REGULATORY COMMISSION

FY 1984-FY 1985 Budget Estimates

(Dollars in Millions)

LEGISLATIVE PROGRAM PROJECTIONS

	Actual	Estimate					
	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
NRC Total Budget Authority	$ 466	$ 466	$ 467	$ 460	$ 450	$ 430	$ 430
Budget Outlays	$ 442	$ 466	$ 467	$ 463	$ 454	$ 438	$ 432

U.S. Nuclear Regulatory Commission
Summary of Headquarters-Regional Resources
(Dollars in thousands; People in Full-Time Equivalents)

	Actual FY 1982		Estimate FY 1983		Estimate FY 1984		Estimate FY 1985	
	Dollars	People	Dollars	People	Dollars	People	Dollars	People
Headquarters Programs								
Nuclear Reactor Regulation	$ 87,450	731	$ 90,396	700	$ 80,191	636	$ 73,860	575
Inspection and Enforcement	18,856	199	23,582	177	23,730	176	26,909	175
Nuclear Material Safety and Safeguards	37,209	320	33,088	284	32,243	259	31,470	256
Nuclear Regulatory Research	220,287	276	209,500	275	199,740	250	193,290	245
Program Technical Support	23,751	370	26,070	371	26,458	349	26,458	339
Program Direction and Administration	37,551	790	39,282	729	40,777	720	41,537	718
Subtotal	$425,104	2,686	$421,918	2,536	$403,139	2,390	$393,524	2,308
Regional Programs								
Nuclear Reactor Regulation	$ 93	7	$ 3,984	48	$ 11,299	94	$ 13,280	134
Inspection and Enforcement	40,688	760	45,698	789	47,180	820	47,861	815
Nuclear Material Safety and Safeguards	138	6	2,562	30	4,037	47	4,240	48
Program Technical Support	454	9	980	18	1,062	18	1,012	18
Program Direction and Administration	0	0	128	2	83	2	83	2
Subtotal	$ 41,373	782	$ 53,352	887	$ 63,661	981	$66,476	1,017
Total Programs								
Nuclear Reactor Regulation	$ 87,543	738	$ 94,380	748	$ 91,490	730	$ 87,140	709
Inspection and Enforcement	59,544	959	69,280	966	70,910	996	74,770	990
Nuclear Material Safety and Safeguards	37,347	326	35,650	314	36,280	306	35,710	304
Nuclear Regulatory Research	220,287	276	209,500	275	199,740	250	193,290	245
Program Technical Support	24,205	379	27,050	389	27,520	367	27,470	357
Program Direction and Administration	37,551	790	39,410	731	40,860	722	41,620	720
TOTAL	$466,477	3,468	$475,270	3,423	$466,800	3,371	$460,000	3,325