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U. S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL
TRANSMITTAL NOTICE

CHAPTER NRC-0125 ORGANIZATION AND FUNCTIONS
OFFICE OF NUCLEAR REGULATORY RESEARCH

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Chapter	<u>NRC-0125</u>	<u>8/12/87</u>	TN	<u>0100-94</u>	<u> </u>
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Appendix	<u>NRC-0125</u>	<u>8/12/87</u>	Appendix	<u>NRC-0125</u>	<u>5/26/89</u>

REMARKS:

This revision of Chapter and Appendix NRC-0125 reflects the realignment of functions among RES divisions approved by the Commission on July 1, 1988 (COMLZ 88-16), and changes which resulted from the EDO reorganization, effective February 5, 1989.

U.S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL

Volume: 0000 General Administration
Part : 0100 Organization

RES

CHAPTER 0125 ORGANIZATION AND FUNCTIONS
OFFICE OF NUCLEAR REGULATORY RESEARCH

0125-01 SUPERVISION

The Office of Nuclear Regulatory Research (RES) is under the supervision of a Director, who reports to, and is under the supervision of, the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations, and Research.

0125-02 FUNCTIONS

The Director is responsible for planning, recommending, and implementing programs of nuclear regulatory research, standards development, and resolution of safety issues for nuclear power plants and other facilities regulated by the NRC. Develops and promulgates all technical regulations. Coordinates research activities within and outside the agency, including appointment of staff to committees and conferences. Coordinates national volunteer standards efforts, including appointment of staff to committees. Specifically, the Office:

021 supervises, directs, coordinates, and approves the activities, including administrative functions, of the various organizational units within RES.

022 enters into, extends, modifies, and terminates orders and agreements with other Federal and State agencies and other institutions.

023 takes action necessary to comply with the decisions of an Administrative Law Judge, an Atomic Safety and Licensing Board, an Atomic Safety and Licensing Appeal Board, or the Commission, after a hearing pursuant to 10 CFR Part 2.

024 ensures that the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations, and Research is fully and currently informed about matters within the functions of RES.

025 performs functions as are required by, and in accordance with, applicable law, statute, or regulation.

026 performs such functions as are assigned by the Commission, the Executive Director for Operations, or the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations, and Research.

Approved: May 26, 1989

0125-03 DELEGATION OF AUTHORITY TO THE DIRECTOR

The Director is authorized and directed to:

031 take such action as is necessary to carry out the functions and execute the authorities assigned by this chapter or other official directives or communications, subject to the limitations specified herein.

032 plan and implement the programs of nuclear regulatory research and standards which the Commission deems necessary for the performance of NRC licensing and related regulatory functions.

033 plan, organize, develop, direct, and coordinate, as appropriate, NRC's interaction with research programs conducted by DOE, other Federal and State agencies, private organizations, academic institutions, and foreign groups (except that initiation of international programs and all policy aspects of programs with foreign groups should be coordinated with the Office of Governmental and Public Affairs).

034 serve as principal point of contact for the Commission with ANSI and other organizations on matters concerning nuclear standards, and direct coordination of Commission participation in IAEA standards and international related activities.

035 submit to the Office of Administration for execution, plans to enter into, extend, modify, and terminate contracts and grants necessary to implement Commission decisions on programs for nuclear regulatory research and technical assistance.

0125-04 DELEGATION OF AUTHORITY BY THE DEPUTY DIRECTOR

One of the Deputy Directors will be authorized and directed to act in the stead of the Director during the absence of the Director.

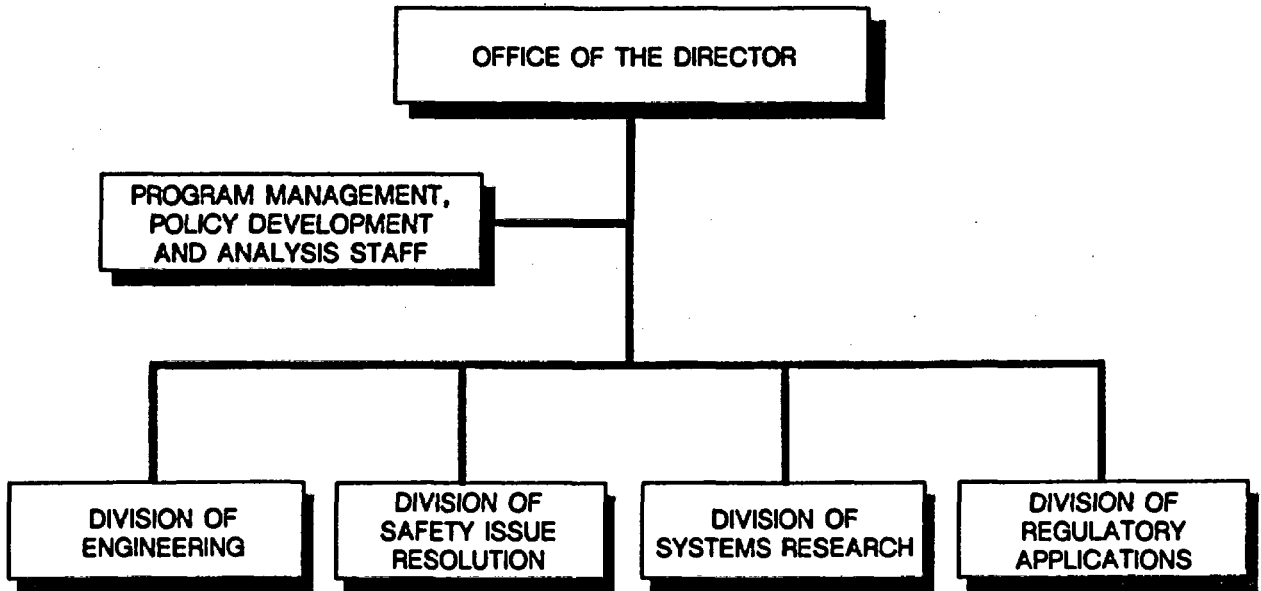
0125-05 REDELEGATION OF AUTHORITY BY THE DIRECTOR

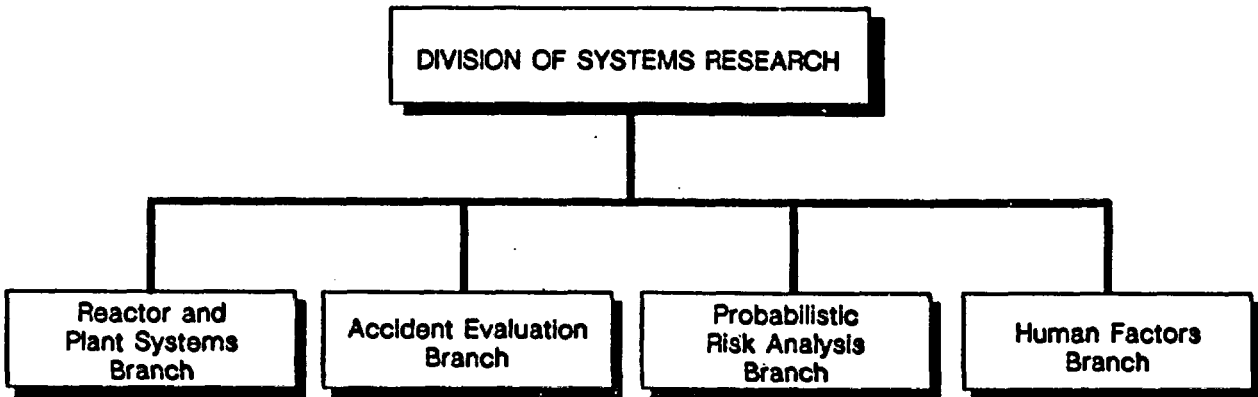
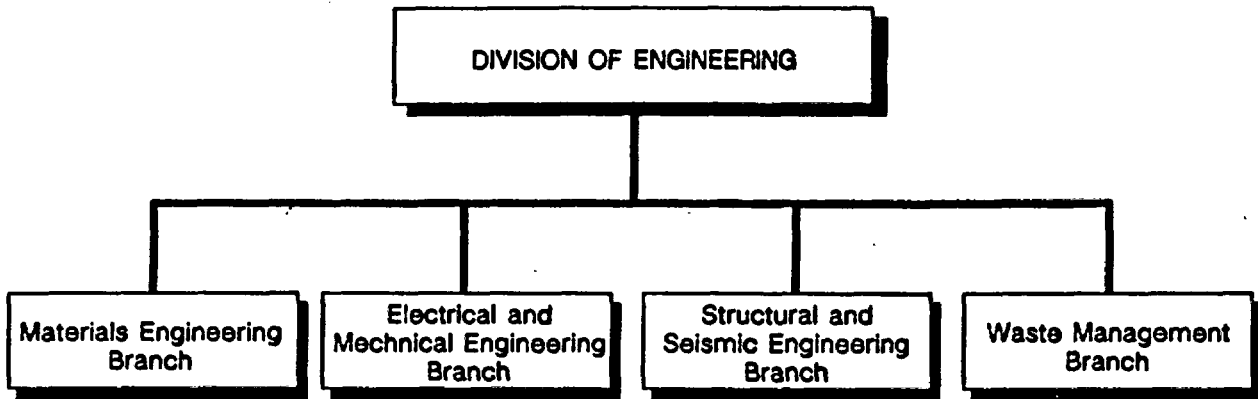
The Director may, except where expressly prohibited, redelegate to others authority delegated to the Director by this or other official directives or communications, except that such redelegations and any stipulations on further redelegations must be in writing. A copy is to be filed with the Office of the Executive Director for Operations, the Secretary of the Commission, the Office of the General Counsel, the Office of Administration, and the Office of Personnel.

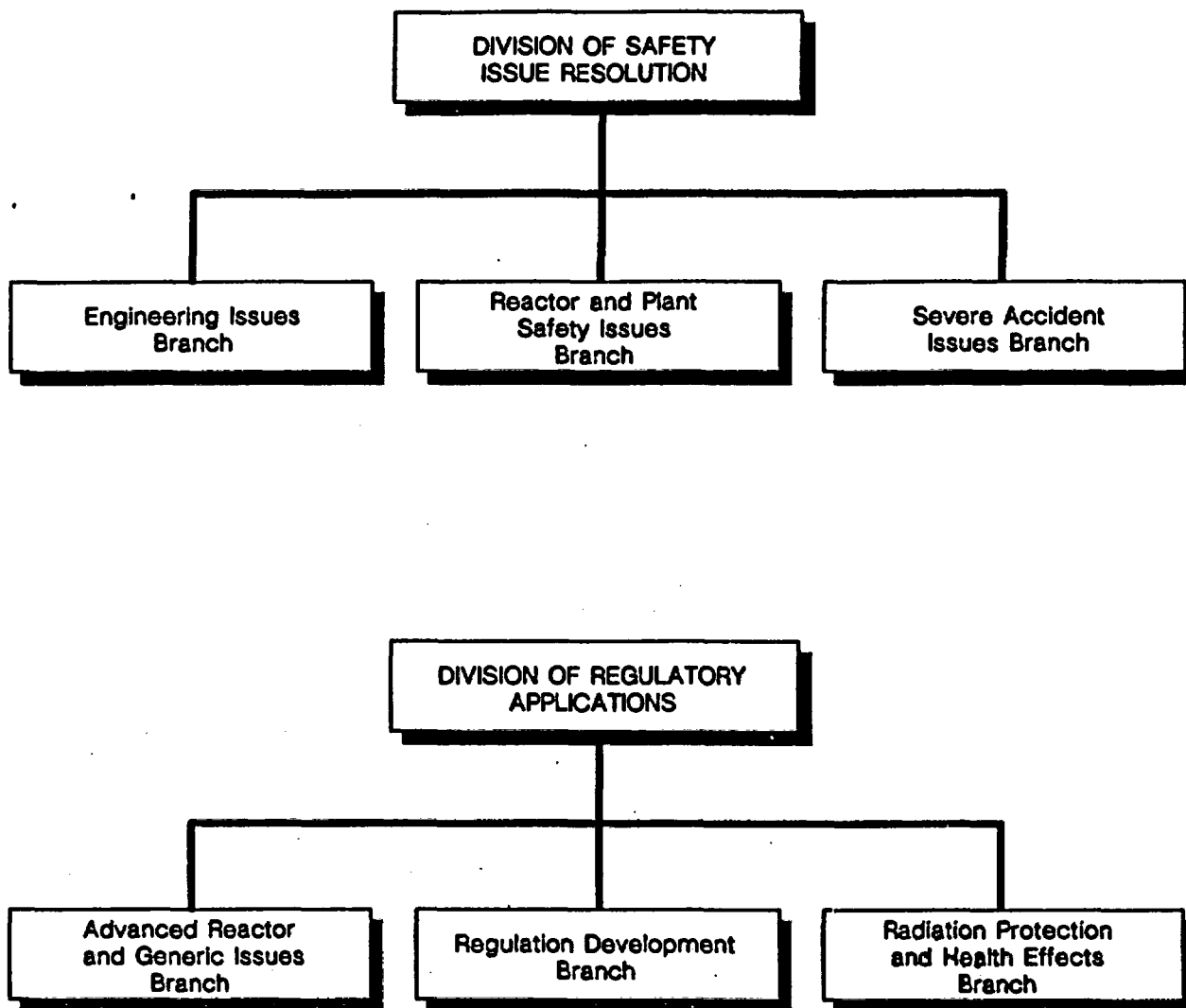
0125-06 ORGANIZATION STRUCTURE AND INTERNAL ASSIGNMENTS

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An organization chart showing internal organization of the Office and a statement of functions of the subdivisions of the Office are attached as NRC Appendix 0125, Parts I and II.

PART I
ORGANIZATION CHARTS







PART II

DISTRIBUTION OF FUNCTIONS

- A. THE OFFICE OF THE DIRECTOR plans, recommends, and implements programs of nuclear regulatory research, standards development, and resolution of safety issues for nuclear power plants and other facilities regulated by the NRC. Develops and promulgates all technical regulations. Coordinates research activities within and outside the Agency including appointment of staff to committees and conferences. Coordinates national volunteer standards efforts including appointment of staff to committees.
- B. THE DIRECTOR, PROGRAM MANAGEMENT, POLICY DEVELOPMENT AND ANALYSIS STAFF, provides direction and coordination of administrative and financial support functions involving budget, financial management, long-range planning, personnel/manpower analysis and resource control, administrative services such as mail, records management, technical editing, FOIA coordination, and other general administrative matters, management information systems development, and word processing systems operation. Reviews and recommends general administrative procedures. As the office spokesman, formulates coordinated responses to the Commission, ACRS, OMB, and Congressional inquiries, and addresses concerns as to the adequacy of the RES budget and the technical applicability of the resulting research program. Addresses resource tradeoffs within the technical and programmatic context.
- C. THE DIRECTOR, DIVISION OF ENGINEERING, plans, develops, and directs comprehensive research programs and standards development for nuclear safety in the design, qualification, construction, inspection, testing, operation, and decommissioning of nuclear power plants, fuel cycle facilities, and management of nuclear waste; and for materials safety, including material characteristics, aging, seismic, and engineering aspects of these facilities and materials.

Establishes or recommends policy, planning, and procedures for the research and standards programs as required to carry out the functions of the Division, and coordinates these programs with other RES Divisions and NRC Offices to ensure that the programs are responsive to their needs. Provides funding guidance to NRC contractors, DOE laboratories, and other government agencies within the Division budget. Consistent with NRC policy and to the extent overall agency needs exist, maintains liaison with and provides technical input to other federal agencies, ANSI, professional societies, international agencies, and other organizations in assigned areas.

1. The Materials Engineering Branch develops, recommends, plans, evaluates, and manages research programs and develops standards for the design, qualification, construction, inspection, testing, and operation of nuclear power plants, nuclear reactors, and fuel cycle facilities, with emphasis on the materials, materials properties, and engineering aspects of the primary system coolant boundary.

Specifically, this branch has the responsibility for materials and chemical engineering research and standards covering in-service inspections for structural integrity, corrosion, fracture mechanics, thermal shock, effects of environment on materials, hydrogen control, water chemistry, and the decommissioning program, as well as the nondestructive examination program, including development of qualifications of inspection personnel, procedures, and equipment. Generally provides assistance to other branches within and outside the Division of Engineering as to their materials-related needs.

2. The Structural and Seismic Engineering Branch develops, recommends, plans, evaluates, and manages research and standards programs for the design, qualification, construction, inspection, testing, maintenance, and operation of nuclear power plants, nuclear reactors, and fuel cycle facilities, with emphasis on the structural and seismic engineering aspects of structures and components. Specifically, this branch has responsibility for these engineering aspects, including effects of general and site specific natural phenomena, load combinations and associated design limits, vibration, soil competence as a support material, and soil/structure interaction. This branch also has the lead for determining structural adequacy of piping systems and has the lead responsibility for coordinating and interfacing activities associated with the ASME Code Section III.
3. The Waste Management Branch develops, recommends, plans, evaluates, and manages research programs and develops rules and standards for the design, qualification, construction, inspection, testing, operation, and closure of waste disposal facilities. Addresses overall performance of such facilities, with emphasis on characterization of the phenomena, methodologies, and performance demonstrations necessary for the management of radioactive waste. Factors and phenomena affecting the public health as a result of routine and accidental releases from nuclear fuel cycle facility operation and waste facility system performance are evaluated. These factors and phenomena include: external factors such as metallurgical, geological, hydrological, and meteorological considerations that affect facility safety; institutional and physical factors that affect the consequences of routine operations and accidents; and the operating, engineering, and system performance factors that affect waste isolation and containment.
4. The Electrical and Mechanical Engineering Branch develops, recommends, plans, evaluates, and manages research and standards programs for the design, qualification, construction, inspection, testing, maintenance, and operation of nuclear power plants, nuclear reactors, and fuel cycle facilities with emphasis on the mechanical, electrical, and fire protection engineering aspects of circuits, piping, and components. Specifically, this branch has responsibility for these engineering aspects, including qualification and survivability of components; effects of aging and in-service degradation, including the effects of environmental stresses and wear on components; and in-service testing for functional adequacy of

components and spent fuel casks. This branch has the lead responsibility for coordinating and interfacing ASME Code Section XI activities. Develops technical basis for regulatory requirements related to reactor aging.

D. THE DIRECTOR, DIVISION OF REGULATORY APPLICATIONS, plans, develops, and directs safety research programs and related standards development for radiation protection, health effects, fuel cycle and materials, safeguards, transportation, and decommissioning. Develops needed regulatory products (rules, regulations, guides, etc.) based on results of the NRC research program and other information. Proposes or initiates rulemaking as appropriate, and manages complex rulemaking or generic issue resolutions that span the technical or organizational responsibilities of NRC Offices and RES Divisions or that involve novel or complex questions of regulatory policy. Develops, documents, and implements policies and procedures for developing regulations, including preparation of regulatory and cost analyses on the impact of proposed regulatory activities, and handling of petitions for rulemaking. Coordinates the RES independent review of all NRC rulemaking activities and monitors the progress of all rulemakings and generic safety issues. Responsible for the development, review, and resolution of standardization and advanced reactor policy issues. Establishes or recommends policy, planning, and procedures for the research and standards programs as required to carry out the functions of the Division, and coordinates these programs with other RES Divisions and NRC Offices to ensure that the programs are responsive to their needs. Provides funding guidance to NRC contractors, DOE laboratories, and other government agencies within the Division budget. Consistent with NRC policy and to the extent overall agency need exists, maintains liaison and provides technical input to other federal agencies, ANSI, professional societies, international agencies, and other organizations in assigned areas.

1. The Advanced Reactor and Generic Issues Branch is responsible for the identification and resolution of advanced reactor safety and policy issues including management of necessary research and technical assistance contracts. Reviews proposed generic issues and regulatory requirements to assess safety benefit and impact and establish priorities. Tracks resolution of Unresolved Safety Issues (USIs) and Generic Safety Issues (GSIs). Develops and implements methods for prioritizing RES programs. Documents research accomplishments and their regulatory application. Responsible for the review and resolution of reactor standardization policy issues. Acts as the focal point in the Office for coordinating requests for technical assistance on reactor safety issues and for ACRS and EPRI coordination. Responsible for reactor Quality Assurance or Quality Control (QA/QC) generic issues, rulemakings, and standards development activities.
2. The Regulation Development Branch develops needed regulatory products (regulations, guides, etc.) based on results of the NRC research program (and other information); proposes or initiates

rulemaking, as appropriate, and manages complex rulemakings that span the technical or organizational responsibilities of several RES branches or that involve novel or complex questions of regulatory policy. Responsible for research and standards development for fuel cycle and material safety, safeguards, transportation safety, and the radiation protection aspects of decommissioning. Has lead on rulemakings dealing with state programs. Develops, documents, and implements policies and procedures needed for developing effective, coherent, consistent, and understandable regulations. Prepares regulatory analyses including cost analysis on the impact of proposed regulatory activities, handles petitions for rulemaking, and has a key role in RES interactions with the CRGR. Considers risk significance of regulations. Coordinates the RES independent review of all NRC rulemaking activities and monitors scheduling of such rulemaking to ensure that rules are developed in the time frame specified in the Commission's guidance.

3. The Radiation Protection and Health Effects Branch is responsible for research and standards development for radiation protection and health effects. Analyzes available scientific evidence in order to evaluate the relationship between human exposure to ionizing radiation and radioactive material and the potential occurrence of radiogenic health effects, including dose-response relationships, exposures associated with NRC-licensed activities, the radiation risk to workers and the public, and estimates of the probability of developing cancer. These analyses provide the bases for severe accident consequence analysis, probabilistic risk assessments, the development of safety goals and emergency plans, identifying radiation protection problems, allocating priorities for regulatory action, and environmental impact assessments. Analyzes risk assessments, recommendations of such organizations as ICRP and NCRP, Presidential guidance to Federal agencies, consensus standards, license performance, cost and feasibility data, and available technical information to provide bases for developing regulatory and technical documents related to radiation protection for workers and the public. Develops and manages research projects needed to support these programs and coordinates them with other NRC Offices, other government agencies, and national and international scientific organizations having related responsibilities.

- E. THE DIRECTOR, DIVISION OF SAFETY ISSUE RESOLUTION, plans, develops, and directs a comprehensive safety program to review and resolve reactor safety issues including: reactor engineering issues associated with design and operation; reactor and plant systems and their design as well as operating procedures and the interaction of systems and equipment with humans in the design and operation; and issues associated with nuclear power plant accidents more severe than design basis accidents. Defines information needed from research for severe accident and generic issue resolution.

Establishes or recommends policy, planning, and procedures for programs as required to carry out the functions of the Division, and coordinates these programs with other RES Divisions and NRC Offices to ensure that the programs are responsive to their needs. Provides funding guidance to NRC contractors, DOE laboratories, and other government agencies within Division budget. Consistent with NRC policy and to the extent overall agency need exists, maintains liaison and provides technical input to other federal agencies, standards organizations, professional societies, international agencies, and other organizations in assigned areas.

1. The Reactor and Safety Issues Branch provides full-time dedicated task management of generic safety issues and unresolved safety issues related to reactor and plant systems design and operation. Coordinates, directs, and reviews contractor and staff efforts, technical findings, and regulatory analysis. Responsible for developing draft and final resolutions for each issue based on a combination of technical, risk, and cost (value-impact) analyses. Responsible for the development of policy and regulations for license renewal through issuing the proposed rule.
 2. The Engineering Issues Branch provides full-time dedicated task management of Commission-designated unresolved safety issues and other generic safety issues focused on engineering and scientific issues associated with nuclear power plant design and operations. Coordinates, directs, and reviews contractor and staff efforts, technical findings, and regulatory analysis. Responsible for developing draft and final resolutions for each issue based on a combination of technical, risk, and cost (value-impact) analyses. Responsible for the coordination and management of NRC staff review of standards and licensee guidance proposed by the Nuclear Construction Issues Group. This branch has lead responsibility for the coordination and interfacing activities associated with the ASME Operations and Maintenance Committee.
 3. The Severe Accident Issues Branch is responsible for the review and resolution of issues associated with nuclear power plant accidents more severe than design basis accidents. Responsible for implementing the Severe Accident Policy in the areas involving regulations and related staff positions affected by source terms. Reviews, evaluates, and develops source term and consequence analysis techniques to assess the potential regulatory impact of severe accidents. Responsible for safety-goal related evaluations and implementation. Responsible for containment performance improvements. Has lead on rulemaking involving emergency preparedness and siting.
- F. THE DIRECTOR, DIVISION OF SYSTEMS RESEARCH, plans, develops, and directs comprehensive safety research programs for predicting nuclear reactor and plant systems behavior under normal, accident, and severe accident conditions. Responsibilities include evaluating challenges to

containments, development of accident source terms, performance and review of probabilistic risk assessments, and accident sequence analysis. Provides systems research program planning, implementation, and results in response to needs defined for severe accident and generic issue resolution. Provides balances of near term against longer term confirmatory research needs.

Establishes or recommends policy, planning, and procedures for the research programs as required to carry out the functions of the Division, and coordinates these programs with other RES Divisions and NRC Offices to ensure that the programs are responsive to their needs. Provides funding guidance to NRC contractors, DOE laboratories, and other government agencies within the Division budget. Consistent with NRC policy and to the extent overall agency needs exist, maintains liaison and provides technical input to other federal agencies, ANSI, professional societies, international agencies, and other organizations in assigned areas.

1. The Accident Evaluation Branch plans, recommends, evaluates, and manages analytical and experimental research programs on accident phenomena of nuclear plants to provide a basis for accident regulatory policy. Emphasis is on modeling release and transport of fission products, aerosols and hydrogen, and accident sequences which could cause reactor coolant pressure boundary or containment failure. Programs include development and verification of validated codes and models of in-vessel and ex-vessel phenomena under accident conditions including the release of non-condensable gases during fuel melt progression, ejection of molten fuel from the primary coolant system, core-concrete interactions, and also the burning of hydrogen. Conducts experimental programs on in-vessel and ex-vessel behavior of fuel and fission product aerosols, including fission product chemistry, ex-vessel interactions of molten fuel with coolant and structural concrete, and high pressure molten fuel ejection, to provide data for development and validation of codes and models as they apply to current operating power reactors and advanced reactor designs.
2. The Probabilistic Risk Analysis Branch performs PRA analyses and reviews full-scope PRA submittals. Uses PRA-based methodologies, models, and analysis techniques to determine overall risk. Provides safety perspectives on plant design and operation by using probabilistic techniques to identify dominant accident sequences leading to core melt and major contributors to these sequences. Responsible for severe accident risk rebaselining. Identifies, reviews, and evaluates internally and externally initiated events to determine the existence of high-risk sequences. Responsible for accident consequence modeling and development of integrated risk analysis methods as well as risk methods improvements. Develops techniques for risk-based regulatory decision making. Provides staff support for risk analysis related to severe accident implementation and the Emergency Operations Center.

3. The Reactor and Plant Systems Branch plans, recommends, evaluates, and manages analytical and experimental research programs on the performance of the primary coolant systems of nuclear plants, including thermal hydraulic transient behavior and interaction with the balance of plant under normal, abnormal, and accident conditions to support assessment of continued safety of operating reactors and evaluation of operational experience, as well as anticipation of safety issues in advanced light water reactors. Responsible for a program of code and model development and verification; conduct of appropriate test programs to provide the necessary empirical data; and detailed analysis of selected operational precursor events and other aids to reactor plant and containment analysis, especially as they relate to operating power reactors. Maintains a thermal-hydraulic Technical Support Center to assist NRC in applying both completed and new research to priority issues of regulatory interests, including requests for assistance from user offices. Directs a research program in Severe Accident Management in order to provide NRC staff with an independent technical basis for evaluating industry submittals.

4. The Human Factors Branch is responsible for planning, developing, and directing comprehensive research and performance programs on human reliability and performance related to all elements of NRC-regulated nuclear activities. Activities include conducting studies on human factors topics such as man-machine interfaces, procedures, human performance and reliability measures, qualifications, training, organization, management, and operational performance; managing and evaluating generic issues related to operations and human factors; evaluating reactor operations issues; developing and improving operational reliability methodology, and translating these efforts into effective tools to aid in making licensing and other regulatory decisions; establishing or evaluating processes for risk prioritization for research conducted by the Office, and providing an integrated assessment of the risk importance of information generated by the research; evaluating the human factors issues associated with medical radiotherapy, industrial radiography, and the handling of nuclear materials; and coordinating these research and standards programs with other NRC Offices. Provides risk-based technical assistance within NRC. Provides technical support for those aspects of accident management involving the plant's operative and support teams. Develops policies, regulations, guidelines, technical bases, and regulatory analyses to support recommendations and requirements related to such issues.