



January/February 1991

Career Opportunities
in Engineering
and Scientific
Disciplines
at the
U.S. Nuclear
Regulatory
Commission

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LIST OF POSITIONS

NRR

Diesel Generator Engineer
Electrical Engineer
Electrical Power System Design and Analysis
Emergency Preparedness
Evaluation of Operational Events
Fracture Mechanist
Human/Computer Interface Analysis and Design
Human Performance Analysis
Hydrologist
Inspection Program
Instrument and Control System Design and Analysis
Materials Engineering/Metallurgist
Mechanical Component Test Engineer
Metallurgical Engineer
Nuclear Power Plant Accident Evaluation
Nuclear Power Plant Review
Operations Engineer
Operator License Examination
Probabilistic Risk Assessment
Pump and Valve Engineer
Radiation Protection
Seismic Qualifications Engineer
Senior Geophysicist
Senior Structural Engineer
Severe Accident Phenomenology
Standards, Guides, and Regulations
Structural Mechanics
Thermal-Hydraulic Analysis
Training Assessment
Vibration Fatigue Engineer
Welding Engineer

NMSS

Chemical Engineer
Environmental Engineer/Scientist
Health Physicists
Hydrogeologist
International Safeguards Analyst
Nuclear Process Engineer
Project Managers
Quality Assurance Engineer

RES

Health Physicist
Materials Engineer
Reactor Systems Engineers
Regulatory Project Manager

AEOD

Plant Systems Engineer
Reactor Operating Experience Engineer
Reactor Systems Engineer
Senior Reactor Systems Engineer

ACRS & ACNW

ACRS Members
ACRS and ACNW Fellows/Senior Fellows

REGIONAL OFFICES

Effluents Radiation Specialist
Emergency Preparedness Specialist
Health Physicist
Material Health Physicist
Operations Engineer (Examiner)
Project Engineer
Radiation Specialist (Health Physicist)
Reactor Engineer (Examiner)
Reactor Inspector (Engineer)
Resident Inspector

Welcome to the Nuclear Regulatory Commission and the start of a new, rewarding career. You, too, can be a member of a team performing a wide variety of activities to protect the public health and safety and the environment. We offer employment stability, professional growth, excellent education and training opportunities, and the challenge of demanding work in an area of high technology. We will match your education, skills, and interests with a challenging and rewarding career path. In addition, we offer competitive salaries, 13 days of vacation and sick leave initially, and a thrift savings plan similar to a 401(k) plan.

The Commission relies on the NRC staff to work in such areas as reactor and nuclear safety, reactor facilities operation, inspection and enforcement, materials safety and safeguards, confirmatory research, and emergency response. NRC's major program offices are currently looking for qualified individuals to fill engineering and scientific positions. A brief description of those offices and positions is included in this brochure.

The Office of Nuclear Reactor Regulation (NRR) is responsible for evaluating all license applications for nuclear reactors; issuing licenses; and regulating the siting, design, construction, operation, maintenance, and decommissioning of the facilities. NRR currently has openings for the following positions or functions:

Electrical Engineer--Position requires experience in quality assurance activities associated with the design and/or manufacture of electrical and electronic products installed in nuclear power plants. [Div. of Reactor Inspection and Safeguards]

Metallurgical Engineer--Position requires knowledge of chemical and physical properties of and use of metals, inservice inspection techniques and requirements, and potential inservice degradation processes for the range of metallic materials used in nuclear power plant components. [Div. of Reactor Inspection and Safeguards]

Thermal-Hydraulic Analysis (GG-13/14)--Position requires training and experience in the analysis of single and multi-phase fluids, especially for transient thermal-hydraulic behavior using codes such as RELAP and TRAC, supersonic and choked flow conditions using advance computer models, transient heat transfer (i.e., from metals to fluids), etc. [Advanced Reactor Tech.]

Instrument and Control System Design and Analysis (GG-13/14)--Position requires training and experience in the design or analysis of state-of-the-art computer-based control systems for the control and protection of vital systems: ultra-high reliability systems, large-scale integrated control systems, fault-tolerant systems, computer-based adaptive controls, or self-testing systems. [Advanced Reactor Tech.]

Structural Mechanics (GG-13/14)--Position requires training and experience in the design or finite element analysis of concrete and/or steel shell structures with focus on dynamic response to internal and external forces including earthquakes or explosions using finite element codes, analysis of elasto-plastic behavior, failure modes or structural behavior or shell structures beyond design conditions. [Advanced Reactor Tech.]

Electrical Power System Design and Analysis (GG-13/14)--Position requires training and experience in the design and analysis of power station electrical systems with emphasis in computer-based analysis of fault levels and voltage drops, design and application of auxiliary generators and batteries, design

of high-reliability, redundant and diverse electrical systems and controls, etc. [Adv. Reactor Tech.]

Severe Accident Phenomenology (GG-13/14)--Position requires training and experience in the analysis of the behavior of advanced reactors or containments under severe accident conditions with emphasis in ex-vessel molten core migration, steam explosions, source term calculation, radionuclide release rates and consequence analysis, etc. [Advanced Reactor Tech.]

Radiation Protection--Position requires detailed knowledge of the principles, theories, and practices of reactor radiation protection, radwaste management, and health physics and their application to nuclear power plant design, operation, and decommissioning. [Radiation Protection Br.]

Nuclear Power Plant Review--Position requires ability to perform detailed technical reviews and prepare safety evaluations of nuclear power plant license applications and license amendments dealing with ALARA design features, radiation protection program, plant shielding and ventilation design, offsite modeling, occupational dose estimates, etc. [Radiation Protection Br.]

Standards, Guides, and Regulations--Position requires knowledge of NRC standards, guides, regulations, etc., that apply to reactor radiation protection. [Radiation Protection Br.]

Inspection Program--Position requires knowledge of NRC inspection procedures and programs for reactor radiation protection, radwaste management, environmental monitoring, confirmatory measurements. Work with Regions on these issues. [Radiation Protection Br.]

Evaluation of Operational Events--Position requires ability to review and evaluate the radiological significance and generic implication of operational events to issue guidance to correct or prevent generic radiological safety problems. [Radiation Protection Br.]

Nuclear Power Plant Accident Evaluation--Position requires ability to develop and evaluate analytical models, assumptions, acceptance criteria, and calculational methods for determinations and evaluations of accident source term and health effects on the public and plant personnel resulting from postulated accidents, operational events, and normal operations. [Radiation Protection Br.]

Operations Engineer--Position requires training and experience in the operation of a commercial nuclear power station as demonstrated by holding a reactor operator's license or a position as a shift technical advisor, and a B.S. in electrical, mechanical or electronics engineering. Experience as a U.S. Navy nuclear officer is desirable. [Performance and Quality Eval. Br.]

Operator License Examination--Position requires training in the principles, theories, and practices of nuclear engineering, with specific knowledge and experience in the areas of nuclear power plant systems, procedures, and integrated facility operations, including reactor operator and senior reactor operator training and qualification requirements. [Operator Licensing Br.]

Human/Computer Interface Analysis and Design--Position requires training and experience in the design and analysis of complex human/machine systems with emphasis on emerging technologies such as artificial intelligence and expert systems, and applications of advanced computer designs to the operation of nuclear power plants, process control facilities, etc. [Human Factors Assessment Br.]

Human Performance Analysis--Position requires training and experience in human factors, with emphasis in organizational behavior or industrial psychology preferred, and working knowledge of nuclear power plant organization, systems and functions applicable to diagnosis, analysis, and resolution of human error-related events. [Human Factors Assessment Br.]

Training Assessment--Position requires training and experience in the development, implementation, and assessment of current performance-based technical training. [Human Factors Assessment Br.]

Probabilistic Risk Assessment--Position requires knowledge of probabilistic risk assessment techniques applied to nuclear power plant regulation with emphasis on events assessment, physical phenomena associated with reactor core melt accidents, radioactive release predictions for severe accidents, including atmospheric plume dispersion, dose calculations, and human health effects of radiation doses. [Probabilistic Risk Assessment Br.]

Emergency Preparedness--Position requires training and experience in emergency preparedness planning and implementation, familiarity with associated regulations and policies, knowledge of nuclear power plant systems and operations with emphasis on the identification and classification of emergencies, knowledge of reactor licensing and inspection programs. [Emergency Preparedness Br.]

Senior Geophysicist--Position requires training and experience in the fields of seismology, geology, and geophysics, including geotechnics and engineering geology relating to seismic and geologic hazards for existing and proposed nuclear facilities. [Structural and Geosciences Br.]

Hydrologist--Position requires knowledge of hydrology and hydrologic engineering to review all types of probable maximum flood protection and other hydrologic conditions related to the environmental controls proposed by licensees. [Structural and Geosciences Br.]

Senior Structural Engineer--Position requires specialized knowledge of structural dynamics, earthquake engineering, and probabilistic risk assessment techniques to analyze hazard fragility of structures and components, etc. [Structural and Geosciences Br.]

Mechanical Component Test Engineer--Position requires training and experience necessary to review and analyze adequacy and acceptability of mechanical component testing programs proposed or conducted on nuclear components including evaluation of testing procedures, instrumentation for monitoring testing results, etc. Should also have background in fluid mechanics and vibration theories. [Mechanical Engineering Br.]

Seismic Qualifications Engineer--Position requires training and experience necessary to review seismic qualification of electrical and mechanical equipment with ability to define seismic input motions, seismic design requirements, shake table testing procedures, testing monitoring techniques, data reduction and interpretation, and knowledge of IEEE Standard 344. [Mechanical Engineering Br.]

Pump and Valve Engineer--Position requires training and experience in pump and valve design, performance characteristics, and inservice testing methods, instrumentation, and data analysis, pump vibration analysis, diagnostic testing of valves (especially motor-operated valves). [Mechanical Engineering Br.]

Diesel Generator Engineer--Position requires training and experience in evaluating mechanical problems associated with operation and testing of diesel generator used in nuclear power plants, performing failure analyses and root cause determinations, and identifying failure mechanisms and developing corrective actions. [Mechanical Engineering Br.]

Vibration Fatigue Engineer--Position requires training and experience in vibration analysis and vibration monitoring techniques used in detecting malfunctions in rotating shafts for reactor coolant pumps, diesel generators, and turbines; and in developing acceptance criteria for evaluating vibration data. [Mechanical Engineering Br.]

Materials Engineers/Metallurgists--Position requires training and experience in reviewing and evaluating the materials and chemical engineering aspects of components and structures for safe operation at nuclear facilities. Should have a working knowledge of ASME Boiler and Pressure Vessel Code Sections III, V, IX, and XI. [Materials and Chemical Engineering Br.]

Fracture Mechanist--Position requires training and experience in the fracture mechanics (linear elastic and elastic-plastic) evaluation of steel pressure boundary components under static and dynamic loading conditions; knowledge of the methods used to determine the fracture mechanics properties of metals. [Materials and Chemical Engineering Br.]

Welding Engineer--Position requires training and experience in general welding engineering, particularly in the fabrication welding of heavy section steel components, such as pressure vessels and piping, and weld inspection and repairs. Should have working knowledge of ASME Boiler and Pressure Vessel Code, strong background in nondestructive examination, welding metallurgy, failure analysis, fracture mechanics, and corrosion of ferrous materials. [Materials and Chemical Engineering Br.]

The Office of Nuclear Material Safeguards and Safety (NMSS) is responsible for ensuring public health and safety and protecting the national security and environmental values in the licensing and regulation of processing, handling, and transportation of nuclear materials, and the disposal of nuclear waste. It also reviews and assesses the safeguards against potential threats, thefts, and sabotage for all licensed facilities. NMSS is currently seeking individuals for the following positions:

Health Physicist (GG-7/13)--Positions required for individuals with training and experience in the review of safety and environmental considerations associated with decommissioning power reactors and materials licensees, and licensing the disposal of low-level radioactive waste. [Div. of Low-Level Waste Management and Decom., Regulatory Sec.]

Health Physicist (GG-7/13)--Position requires training and experience in the safety and environmental review of radiation protection at low-level radioactive waste and uranium recovery facilities. [Div. of Low-Level Waste Management and Decom., Operations Br.]

Environmental Engineer/Scientist (GG-14)--Position requires extensive experience in the review, analyses, and evaluation of environmental statements following 10 CFR Part 51. [Div. of Low-Level Waste Management and Decom., Operations Br.]

Hydrogeologist (GG-14)--Position requires an advanced degree in hydrology and geology with special emphasis in hydrogeology and experience and knowledge of saturated and unsaturated groundwater models. Also requires knowledge of geochemistry, water quality, numerical methods, geophysical methods in groundwater exploration, radiochemistry, groundwater hydraulics, stratigraphy, and fundamentals of transport phenomena in groundwater investigations and monitoring of waste isolation facilities. [Div. of Low-Level Waste Management and Decom., Technical Br.]

Project Managers, various positions (GG-7/13)--Positions involve (1) review of safety and environmental considerations associated with decommissioning power reactors and materials licensees and licensing the disposal of low-level radioactive waste; (2) geotechnical emphasis in review and evaluation of safety and environmental considerations associated with NRC licensing of uranium mill recovery facilities; (3) health physicist emphasis in safety and environmental reviews of proposed and existing low-level radioactive waste and uranium recovery facilities with specialization in radiation protection for siting, design, operation, closure, inspection, and monitoring of low-level waste disposal facilities; and (4) planning and managing of safety and environmental reviews of proposed and existing low-level radioactive waste disposal facilities. [Div. of Low-Level Waste Management and Decom., Technical Br.]

Project Manager (GG-13)--Position requires experience in development of repository licensing rulemaking

and guidance, including technical positions and regulatory guides. [Div. of High-Level Waste Management, Repository Licensing, and QA Project Direc.]

Health Physicist (GG-13)--Position requires performance of assessments of operations, incidents, reports, documents, and recommendations involving radioactive materials. Monitors the licensing and inspection activities of NRC Regional Offices. [Div. of Industrial and Medical Nuclear Safety, Operations Br.]

Chemical Engineer (GG-13)--[Div. of Indus. and Med. Nuclear Safety, Fuel Cycle Safety Br.]

Nuclear Process Engineer (GG-13)--[Div. of Indus. and Med. Nuclear Safety, Fuel Cycle Safety Br.]

Health Physicist (GG-13)--Position requires expertise in safe use of byproduct, source, and special nuclear materials, particularly industrial uses of radioactive materials. [Div. of Indus. and Med. Nuclear Safety; Medical, Academic and Commercial Use Safety Br.]

Mechanical Engineer (GG-13)--Position requires ability to assess mechanical, structural, and shielding designs of sealed source and device designs for regulation of byproduct materials. [Div. of Indus. and Med. Nuclear Safety; Medical, Academic and Commercial Use Safety Br.]

Project Manager (GG-14)--Position requires development and review of licensing, inspection, and enforcement criteria for regulation of medical and academic use for byproduct materials. [Div. of Indus. and Med. Nuclear Safety; Medical, Academic and Commercial Use Safety Br.]

Project Manager (GG-13)--[Div. of Safeguards and Trans., Transportation Br.]

Quality Assurance Engineer (GG-13)--Position requires inspections of the suppliers of radioactive materials transportation packages and radioactive material shipment activities at licensees' locations. [Div. of Safeguards and Trans., Transportation Br.]

Health Physicist (GG-13)--Position requires the inspection of suppliers of radioactive materials transportation packages and radioactive material shipment activities at licensees' locations. [Div. of Safeguards and Trans., Transportation Br.]

International Safeguards Analyst (GG-13)--Position requires complex analysis and evaluation of material accounting and control programs in foreign countries and the effectiveness of IAEA safeguards implementation for export/import license applications and other proposed international arrangements. [Div. of Safeguards and Trans., Transportation Br.]

The Office of Nuclear Regulatory Research (RES) is responsible for research relating to confirmatory assessment of reactor safety, safeguards, and environmental protection in support of the licensing and regulatory process. It also develops regulations, criteria, guides, standards and codes governing health, safety, environmental, and safeguards aspects of siting, design, construction, and operation of nuclear facilities as well as the management, use, and safeguarding of nuclear materials held by licensees. RES currently has a need for individuals for the following positions or functions:

Health Physicist (GG-14)--Position requires coordination and development of standards and supporting documents in radiation protection associated with the possession, use, transport, transfer, and disposal of byproduct, source, and special nuclear material. [Div. Regulatory Applications, Radiation Protection and Health Effects Br.]

Regulatory Program Manager (GG-14)--Position requires training and experience to manage specific research and technical support programs related to the safety of nuclear facilities, to develop specific regulatory guides and standards, and to contribute to the development and evaluation of national standards related to nuclear facility licensing decisions. [Div. of Regulatory Applications, Regulation Devel. Br.]

Reactor Systems Engineer (GG-9/11)--Position requires general knowledge of reactor safety requirements of various reactors to review licensee submissions to the Individual Plant Examination (IPE) program and assist in the coordination of other reviewers assigned to the task. [Div. of Safety Issue Resolution, Severe Accident Issues Br.]

Reactor Systems Engineer (GG-14)--Position requires training and experience to identify, review, and resolve issues associated with nuclear power plant accidents, including more severe accidents. Should be able to apply severe accident research phenomenology, including containment behavior and performance, and fission product release, transport and consequence analyses toward implementing NRC policies. [Div. of Safety Issue Res., Severe Accident Issues Br.]

Materials Engineer (GG-13/14)--Position requires training and experience to plan, organize, direct, and coordinate research efforts associated with metallurgy, structural and fracture mechanics, and integrity of primary system structural components under normal operating, upset accident, and faulted conditions. [Div. of Engineering, Materials Eng. Br.]

The Office for Analysis and Evaluation of Operational Data (AEOD) analyzes and evaluates operational safety data associated with NRC-licensed activities to identify issues that require NRC or industry action. It also develops and manages the NRC program for response to incidents and emergencies as well as provides technical training for the agency. AEOD has the following positions available:

Reactor Systems Engineer (GG-14)--Position requires knowledge of principles, theories, and practices in the field of nuclear engineering, thermal and hydraulic analyses, reactor systems, auxiliary systems, transient analysis, accident analysis, and engineered safety systems, with emphasis on the human factors aspects to resolve potential safety problems. [Div. of Safety Programs, Reactor Operations Analysis Br.]

Plant Systems Engineer (GG-14)--Position requires knowledge of nuclear steam supply and balance of plant systems and components for nuclear power plants to analyze significance of operational experience. This activity is part of an integrated national program for the systematic collection, analysis, and feedback of operating experience to the U.S. operating nuclear industry and foreign regulatory groups. [Div. of Safety Programs, Trends and Patterns Analysis Br.]

Reactor Operating Experience Engineer (GG-14)--Position requires knowledge of the overall operation of nuclear power plants to analyze the significance of operational experience, identify the need for additional analyses, and to conduct systematic evaluations to resolve potential safety problems. Also requires knowledge of computers and data base management systems to monitor the development of systems for the collection, handling, screening, analysis, evaluation, and dissemination of operational experience. [Div. of Safety Programs, Trends and Patterns Analysis Br.]

Senior Reactor Systems Engineer (GG-15)--Position requires thorough knowledge of field of nuclear engineering, thermal and hydraulic analyses, reactor systems, auxiliary systems, transient analysis, accident analysis and engineered safety systems needed to assess the safety significance of operational experience, identify the need for additional analyses, and conduct systematic

evaluations to resolve potential safety problems indicated by operational experience. [Div. of Safety Programs, Reactor Operations Analysis Br.]

The Advisory Committee on Reactor Safeguards (ACRS) and Advisory Committee on Nuclear Waste (ACNW) are committees that report directly to the Commission. The ACRS' charter is to review various safety studies and applications for construction permits and facility operating licenses and report to the Commission its findings and recommendations. The ACNW reviews and advises the Commission on all aspects of nuclear waste management and disposal within the purview of NRC responsibilities.

The ACRS invites applications for membership for two positions opening in February/May 1991. Members are appointed for four-year terms, must have experience in commercial reactor operations, nuclear engineering design, and other related engineering disciplines. Members must be able to devote a substantial amount of time to ACRS work during the year to conduct the review of safety issues related to the operation of more than 100 nuclear power plants. Send resumes with salary history to Mr. Raymond Fraley, ACRS Executive Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, or call (301)-492-8049.

Additional positions are available for Fellows/Senior Fellows (GG13/14/15) for the ACRS and ACNW. ACRS Fellows/Senior Fellows assist the ACRS in assuring the safety of operating reactors, review new U.S. reactor designs, and assess the technical merit of proposed regulatory actions and research. ACNW Fellows/Senior Fellows assist the ACNW in reviewing all aspects of nuclear waste management and related reactor decommissioning and radiation protection issues. Submit resumes with salary history to Mr. Richard DiSalvo, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, or call (301)492-9851.

NRC's Regional Offices are located in or near Philadelphia, Atlanta, Chicago, Dallas, and San Francisco. Employees in these Offices carry out agency responsibilities and assigned programs within their respective regional boundaries. These programs relate to inspection, enforcement, licensing, state agreements, state liaison, and emergency response. The Regional Offices seek individuals for the following positions:

Reactor Inspector (Engineer)(GG-11/13)--Duties include inspections of reactor licensee activities as well as the inspection, enforcement, and safety assessment of construction, pre-operational testing, start-up, and all phases of operation. [Chicago]

Resident Inspector (GG-11/13)--Position requires the resident inspector to be assigned to a specific nuclear power facility where he/she plans and conducts inspections during reactor operations. [Philadelphia]

Reactor Engineer (Examiner)--Position requires the development, preparation, and administration of written, oral, and practical examinations for applicants for NRC operator and senior operator licenses for nuclear power plant facilities. Also requires the evaluation of results and recommendations for approval or denial of the license.

Health Physicist (GG-11/13/14)--Position requires individual to conduct inspections and license application reviews to verify radiation safety and radiological control of radioactive materials relative to handling, storage, operation, use, disposal, and decontamination activities. [Philadelphia]

Emergency Preparedness Specialist (GG-7/9/11/13)--Position requires ability to assess the quality and effectiveness of the emergency response programs at nuclear power and research reactors.
[Philadelphia]

Operations Engineer (Examiner) (GG-11/13)--Position requires individual to develop, prepare, and administer written, oral, and practical examinations for applicants for NRC operator and senior operator licenses for production and utilization facilities. Also requires evaluation of the results during testing and recommendations for approval or denial of license. [Philadelphia]

Project Engineer (GG-13/14)--Position requires ability to analyze events, perform systematic assessments of licensee performance and enforcement and technical evaluations. Must have knowledge and experience in reactor codes, standards, and procedures with particular emphasis on safe operation of power reactors. [Philadelphia]

Radiation Specialist (Health Physicist) (GG-7/9/11/13)--Position requires ability to perform specialized radiological and environmental inspections at all types of facilities licensed by NRC, and to analyze and evaluate radiological safety consequences of the use of and exposure to radioactive material.
[Philadelphia, San Francisco]

Material Health Physicist (GG-7/9/11/13)--Position requires the performance of radiological and environmental protection inspections and investigations at various types of licensee facilities that possess, use, and process byproduct, source, and special nuclear materials. Also analyzes and evaluates radiological hazards, design specifications, and operating procedures described in license applications. [Philadelphia]

Effluents Radiation Specialist (GG-7/9/11/13)--Position requires the assessment of the effectiveness of various programs of power and research reactors and fuel facilities that deal with the management and control of radioactive wastes, including radioactive waste controls, radiological confirmatory measurement, water chemistry control and chemical analysis, transportation and disposal of radioactive materials and radiological environmental monitoring. [Philadelphia]

Please forward your Federal Employment Application Form (SF-71), with salary history, to:

U.S. Nuclear Regulatory Commission
Office of Personnel
W-450
Recruiting Staff
Washington, D.C. 20555

Or, if you have a geographic preference, please forward it to the appropriate NRC Regional Office noted as follows:

Personnel Management Specialist
NRC Region I
475 Allendale Road
King of Prussia, Pennsylvania 19406

Personnel Management Specialist
NRC Region II
101 Marietta Street
Suite 2900
Atlanta, Georgia 30323

Personnel Management Specialist
NRC Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Personnel Management Specialist
NRC Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Personnel Management Specialist
NRC Region V
1450 Maria Lane
Suite 210
Walnut Creek, California 94596

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