CAREERS IN THE NUCLEAR INDUSTRY

Amit Varma
Professor, School of Civil Engineering
PILLARS OF NUCLEAR POWER INDUSTRY

◆ INTEGRITY
  ◆ Code of Federal Regulations (10 CFR 21)
  ◆ Every individual is legally and morally responsible for reporting any and all issues that they perceive
  ◆ All reported issues have to be evaluated carefully, and acted upon deliberately
PILLARS …

◆ SAFETY

◆ 10 CFR 50 – Safety-related components

◆ Anything related to nuclear materials

◆ Safety Review Plan - Most rigorously reviewed

◆ Reviewed by increasing unbiased parties:
  ◆ Vendor
  ◆ Utility
  ◆ NRC
  ◆ ACRS
  ◆ Commissioners
PILLARS...

- Quality
- Extremely high standard for quality
- Quality plan has to be laid out for anything and everything involved in design, construction, operation, maintenance, deconstruction
- NQA1 – Nuclear Quality Assurance is the diamond standard for vendors. Extremely rigorous, expensive, but reliable
- Commercial grade dedication
PILLARS...

◆ RELIABILITY

◆ Hazard Curve
  ◆ Continuously updated as information becomes available

◆ Fragility Curve
  ◆ Based on experimental evaluation, and accounting for ageing related effects

◆ Probabilistic Risk Analysis
  ◆ Evaluation to minimize risk while considering various possibilities, event trees, hazards and fragility
PILLARS...

◆ COMMUNICATION

◆ Various technical disciplines

◆ Management Goals – Design, Construction, Operation

◆ Within and Without...

◆ Design Team, Licensing Team, Regulators, Public, Owner, Utility...

◆ Communicating Risk
Careers in the Nuclear Industry

Careers in nuclear energy offer challenging work with competitive salaries and benefits. The industry needs engineers, technicians, craft workers and other professionals in positions ranging from entry-level to mid-career and those with military training and service.

Is a Career in the Nuclear Industry Right for You?

Be a Part of a Growing Workforce

Careers in the nuclear energy industry offer challenging work, competitive salaries and benefits, and opportunities for advancement. Nuclear professionals help to protect the environment by supporting the nation's fleet of emission-free nuclear power plants, which provide nearly 20 percent of U.S. electricity.
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What Are Employers Looking for

Nuclear utilities and other nuclear energy companies need workers across a broad range of disciplines. Opportunities exist for a variety of engineers, technicians, skilled trade and technology workers, and others.
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Enjoy a Challenging Career in Advanced Technology

The safe and reliable operation of the nation's 99 nuclear plants relies on people of commitment and integrity acting as stewards of public health and safety, and the environment.

Success in this mission over the past 30 years has resulted in a demand for new nuclear plants to help meet the country's need for reliable, economic and emission-free electricity. With this demand comes the need for individuals who possess a wide variety of knowledge, skills and abilities, and have a desire to learn.

Highly advanced technology and complex industrial processes present challenges that can change daily. Every work day is unique, with opportunities to resolve problems and improve processes. Opportunities may be individual or in team environments. Creativity and responsibility are rewarded with career advancement and professional development. Salaries are among the most competitive in the country.
What Is Driving Recruitment Efforts?

Recruitment of the future workforce is a major focus for the U.S. nuclear energy industry. Several factors are driving this.

New Nuclear Power Plants

With five new nuclear plants under construction in the United States and another 66 around the world, these projects will need construction personnel, engineers, health physicists, power plant operators, maintenance staff and many other disciplines to build and then operate these facilities.

- New Nuclear Plant Status

License Renewal

Seventy-four of the nation's 99 power reactors have renewed their operating licenses and will continue to produce electricity for decades. The other reactors also are expected to renew their licenses. The companies that operate nuclear plants maintain them in excellent condition throughout their life cycles, from replacing small components to major modifications. Operating plants require the same staffing and expertise that new plants coming on line will need.

Retirements Among Existing Work Force

About half the nuclear industry's work force will be eligible to retire during the next 10 years. Along with plans for industry growth, the expected attrition of a large portion of the industry's total work force has prompted an unprecedented recruitment effort throughout the industry.
What Are Employers Looking For?

Electric utilities and other nuclear energy companies need workers across a broad range of disciplines. Opportunities exist for a variety of engineers, technicians, skilled trade and technology workers, and others.

Nuclear Energy Isn't Just for Nuclear Engineers

The industry anticipates the need for significant numbers of entry-level employees in all categories, but there also is a need for mid-career staff and individuals who have served in the military and are ready to move into the civilian sector.

Training is a major focus in the nuclear industry as workers continually sharpen and expand their knowledge and skills, as well as learn new skills. The goal is excellent performance on the job, providing the opportunity to expand responsibilities or change jobs within the organization.

Working at a Nuclear Energy Facility is Safe!

The nation's nuclear power plants are among the safest and most secure industrial facilities in the United States. Multiple layers of physical security, together with high levels of operational performance, protect plant workers, the public and the environment.
Types of Careers

Engineers

• Civil/structural
• Electrical
• Materials
• Mechanical
• Nuclear
• Computer
• Instrumentation and control
• Fire protection
• Systems
• Project management

Professionals

• Accountants
• Analysts
• Business management experts
• Chemists
• Document control experts
• Health physicists
• Information technology experts
• Occupational safety, including radiation safety experts
• Plant operators (licensed and non-licensed)
CAREERS

Technicians and Skilled Trades Workers

- Carpenters
- Construction trades and related workers
- Electricians
- Engineering technicians
- Heavy equipment operators
- Machinists
- Maintenance technicians
- Millwrights
- Pipefitters
- Science technicians, including chemical, environmental protection, instrumentation and control, radiation protection and nuclear
- Security officers
- Welders
Nuclear Energy Training & Education Programs

Find out about the Nuclear Uniform Curriculum Program and see links to U.S. universities and community colleges that offer programs in nuclear technologies. Search for educational programs in nuclear technologies by region of the country.

Where to Obtain Education in Nuclear Technologies

Nearly all careers in the nuclear industry require a high school diploma or GED (minimum). Many positions provide extensive company-sponsored on-the-job training, as well as formal classroom and laboratory training. However, associate degrees and bachelor of science or advanced degrees are needed for some jobs, especially in engineering, chemistry and operations.

In addition, many jobs in the nuclear industry require background checks and drug and alcohol screening as part of the industry’s fitness-for-duty program. This program is designed to ensure that employees can enjoy a safe and secure workplace, free from the adverse effects of drugs and alcohol. This is necessary to ensure that there are no distractions from the primary goals of personnel and plant safety.
What is the Nuclear Uniform Curriculum Program?

The Nuclear Uniform Curriculum Program is an industry strategy to ensure the right people are in the right places at the right times. By organizing industry partnerships with two-year education programs it leverages resources to provide the next generation of highly skilled workers.

Military

U.S. military personnel are a targeted population to fill entry-level and mid-career engineering, technician, operator and security positions. Veterans from all branches of the U.S. military should consider applying for vacancies. The industry is especially interested in graduates of the U.S. Navy's nuclear propulsion program since the nuclear fundamentals and components education graduates receive is directly applicable to careers at nuclear power plants. More information can be found at the Navy Agreement of Understanding Program and the Center for Energy Workforce Development's Troops to Energy Program.

Educational Institutions

Labor Apprenticeships: Six labor apprenticeship programs are aligned to the nuclear energy industry's required initial training program. These six programs are under the Nuclear Mechanic Apprenticeship Program.

Military: All veterans are desired by the industry, but the Navy's Nuclear Propulsion graduates have additional knowledge and skills that are highly desirable to the nuclear energy industry.
Resources for Nuclear Professionals

For those already in the nuclear industry, this section provides information on professional societies, competency models and professional development opportunities to grow in the industry.

Professional Societies

- American Nuclear Society
- Health Physics Society
- North American Young Generation in Nuclear
- U.S. Women in Nuclear

Competency Models

- Entry Level Technician Competency Model
- Entry and Experienced Engineer Competency Model
- Mid-Career Competency Model

Professional Development Opportunities

- +One Program
- World Nuclear University – Summer Institute
QUESTIONS, COMMENTS, DISCUSSION