A DAY IN THE LIFE

of a Mechanical Design Engineer

I work for a nuclear consulting company as a mechanical engineer. In this role, I design modifications that commercial nuclear plants want to make to their equipment. These modifications can be as small as replacing a valve, for instance changing from a globe valve to a ball valve. They can also be as large as replacing the plant's low pressure turbines.

As a mechanical engineer, I'm responsible for evaluating that the new equipment will work as expected once installed. Calculations that I often perform include fluid pressure drop, pump total dynamic head, checks for cavitation, heat transfer across heat exchangers, equipment heat load changes to the environment and how that impacts room temperature, and increases to combustible load in a room. I estimate 90% of my time is spent in the office performing calculations and updating drawings, but the rest is spent in the field gathering the data I need for inputs.

What stuck with me the most when I first started was when a coworker told me that I wasn't asking enough questions. They knew I didn't understand everything, and having me ask questions showed them the gaps in my knowledge. To this day I never hesitate to ask questions when I don't understand something.

Christy Fletcher

Mechanical Engineer at ENERCON

A DAY IN THE LIFE

of a Mechanical Systems Engineer

I work as a Mechanical Engineer for a company that supports operating plants and designs/builds new nuclear power plants. I am in the Operating Plants Mechanical Systems group and my role currently centers around Power Uprate projects. The goal of these projects is to take current operating plants and increase the power they are capable of producing so they can function more efficiently and extend their operating life. Each uprate requires a comprehensive understanding of how interconnected systems will respond to increased thermal and hydraulic loads.

My degree is in Mechanical Engineering which aligns closely with my current work, though the scope of my job has expanded into areas I didn't expect. One of the most hands-on and rewarding experiences in my career was working at Vogtle Nuclear Power Plant Units 3 and 4, one of the first new nuclear reactors built in the U.S. in over 40 years. I was involved in HVAC startup testing, ensuring that the plant's systems were functioning correctly during commissioning. It was a unique opportunity to apply my engineering knowledge in a real-world, high-stakes environment and to contribute to a historic milestone in the U.S. nuclear industry.

The best piece of advice I received early in my career was: "Don't just solve the problem—understand the system." As an entry level engineer, you are not expected to know everything there is to know about a particular system or area. Instead, you are hired based on your ability to learn. That mindset has helped me approach challenges more holistically and has been invaluable in a field where safety, precision, and long-term thinking are critical.

Kaitlin Milde

Mechanical Engineer at Westinghouse Electric Company

A DAY IN THE LIFE

of an
Energy Planner

I work at Ontario Power Generation (OPG), a utility company in the province of Ontario, Canada. OPG owns and operates 8 nuclear units, 66 hydroelectric stations, 4 natural gas plants, and 1 biomass plant. This accounts for about 18,000 MW of electricity for the province of Ontario and helps power over 10 million homes.

I work in the Energy Markets control room in my company. This is a 24/7 center that makes sure the lights are always on in Ontario. This means I work a 12-hour shift – half of it on days (6 a.m – 6 p.m.) and half of it on nights (6 p.m to 6 a.m). At my work, I am responsible for the energy planning and optimizing of these 18,000 MW of generation capacity in the real-time market. I am also responsible with how much electricity we want to export and import every hour of my shift. For Ontario, we export and import electricity from Quebec, New York, Minnesota, Manitoba, Michigan, and PJM. All the energy planning is dependent on the energy demand of Ontario – where weather, temperature, customer's use of energy, and wind profile plays a role in forecasting the demand.

My background is in Chemical Engineering, though now my work revolves mostly on energy economics. My advice is even though you were trained on a particular subject or field, don't be afraid to keep an open mind and try something new. This will open doors to many other opportunities. Treat your career as a game of monopoly, where you acquire experiences here and there.

Veeshesh Sunassy

Energy Markets Coordinator at Ontario Power Generation

A DAY IN THE LIFE

of an
Analysis Engineer

I work as a Senior Analysis Engineer at Curtiss-Wright, a nuclear equipment provider for existing power plants and upcoming Small Modular Reactors (SMRs). I do a lot of qualification testing for nuclear equipment which entails designing test fixtures intended for seismic testing, troubleshooting with machinists on machine drawings, creating documents entailing the level of thermal and radiation exposure to said equipment, and writing QME-1 compliant reports for check valves.

Additionally, I create Computational Fluid Dynamics (CFD) simulations to ensure our valves are meeting flow requirements given by customers (such as Cv requirements, minimum flow needed to fully open the valves, etc.).

For SMR related projects, I am heavily involved in research and development of new product lines to remain competitive in the field and have done preliminary fluid-thermal analysis on critical components for an upcoming SMR startup.

A piece of advice that has stuck with me the most throughout my career is that it is essential to do work in a thorough and correct manner, even if this results in a longer lead time estimate for customers. Mistakes have significantly delayed projects before and can result in entire re-manufacturing. Attention to detail and a good level understanding will make you a strong engineer anywhere.

Genesis Ponce

Sr. Analysis Engineer at Curtiss-Wright (Nuclear Division)

A DAY IN THE LIFE

of a
Thermal Hydraulic Test Engineer

I work for an advanced reactor development company as a thermal hydraulic test engineer. My job involves working closely with various system design teams to devise and execute scaled-down tests to measure pressure loss or heat transfer behavior in the fluid "cooling" circuits of a sodium fast reactor. These tests range from simple water tests to megawatt-scale tests in liquid sodium operating at temperatures greater than 1000°F.

Thermal hydraulic testing is essential to ensure accurate prediction of the power plant's efficiency, which directly impacts its economic feasibility (cost of electricity in $/kWh). Even more crucial, scaled thermal hydraulic tests are used to validate numerical computer models that predict the behavior of the reactor core under accident scenarios such as loss of on-site power or failure of a primary coolant pump. Planning and executing these tests requires a mix of design work, procurement, fabrication, extensive documentation via test procedures and hazard analyses, and analysis of large datasets in MATLAB or python.

When I was in grad school at University of Wisconsin – Madison, an advisor of mine told me that failure is a good thing. At the time, this seemed insane and counterintuitive to the academic ways of research. This conversation has stuck with me through the years since failure presents a great opportunity for improvement. Test engineers are applied researchers who must be prepared for and accepting of failure. When test results are not what was expected or a prototype fails to perform its intended function, this can be the ideal opportunity to improve the design, fabrication processes, and operating procedures. Failures should not be hidden and forgotten but dignified and scrutinized for potential lessons learned.

Shaun Aakre, PhD, PE

Thermal Hydraulic Test Engineer at TerraPower

A DAY IN THE LIFE

of a
Senior Reactor Operator

I work for a nuclear utility as a licensed Senior Reactor Operator. I oversee the safe operation of one of our nuclear units when I assume the watch, and oversight of any maintenance happening while I am there. I have a degree in nuclear engineering, and my license required 18+ months of classroom and simulator training that was evaluated by the Nuclear Regulatory Commission (NRC) to earn this license.

As a Senior Reactor Operator (SRO), I am responsible for all activities, including craft (mechanical, electrical, I&C, etc.) maintenance, that occur on my unit when on watch. This could include briefing and executing performance testing of components, reactivity manipulations needed to maintain 100% power, directing reactor operators and non-licensed operators in the case of a plant issue requiring operations response, and oversight of planned plant maintenance. Every 5 weeks, I attend continuing training where I am evaluated in the simulator or via a written test, and every 2 years I am required to be evaluated via both methods, in addition to in-plant activity evaluations. Every 18 months, one of the units is shut down and SROs will manage all aspects of plant maintenance, including infrequently performed activities like moving nuclear fuel and disassembling the reactor to perform major maintenance.

In addition, SROs with technical college degrees receive additional training to qualify as Shift Technical Advisers (STAs), and provide independent technical oversight during shift activities, as well as ensure that all regulatory requirements are met and deficient conditions identified during shift are adequately dispositioned for resolution and captured for awareness by the shift.

What piece of advice were you given early in your career that has stuck with you the most? Early in my career, when I was working as an engineer, I was told that no one will advocate for me as much or as hard as I will. I have used this mindset to continually promote myself and my career aspirations, actively seek support for these goals, and pursue assignments and projects that benefit the company while also furthering my knowledge and connections.

Courtney Tampas

Senior Reactor Operator at Dominion Energy – Surry Power Station

A DAY IN THE LIFE

of a
Programs Engineer

I am a Regulatory Code Programs Engineer at a nuclear power plant owned by an energy technology company. I studied nuclear engineering in college and joined the nuclear industry shortly after graduating. My current role is to manage regulatory and technical programs that ensure we follow industry standards. These standards require testing and inspection of components essential to reactor safety, including those responsible for shutting down the reactor, maintaining its shutdown, or mitigating the consequences of an accident.

As a Programs Engineer, I define the scope of required tests and examinations, support test execution, and analyze the results. Basic tests include verifying that emergency water pumps can deliver the necessary flow to the reactor core to cool it during an accident. More complex tests involve pressurizing the reactor containment structure to simulate conditions from a steam line break to evaluate how effectively it contains pressure. If tests fail or begin trending toward failure, I quickly advocate for and facilitate corrective actions.

Approximately 90% of my time is spent in an office environment, preparing for tests, planning examinations, and analyzing test and exam results. The remaining 10% is spent in the plant inspecting and photographing equipment, scouting work locations, and observing maintenance and testing activities.

A piece of advice that I was given was “engineering is not a desk job.” To understand how your work affects plant operations and to confirm that the structures, systems, and components of your site reflect what you are visualizing in your mind, you must see the plant for yourself.

Roger Champion

Programs Engineer with Holtec International at Palisades Nuclear Generating Station

A DAY IN THE LIFE

of a
Procurement Manager

As a Procurement Manager at Constellation Energy, my day is a dynamic blend of strategic sourcing, cross-functional collaboration, and operational execution. I start my morning by reviewing procurement action items and aligning with engineering or category managers to clarify ownership and scope of new tasks, especially when assignments are ambiguous or span multiple departments.

Mid-morning often includes meetings with internal stakeholders such as the Senior Leadership Team, engineering teams, or external vendors. These sessions are critical for aligning on project timelines, resolving contract ambiguities, and ensuring compliance with procurement protocols.

My career began in the nuclear industry in Security after graduating with a degree in Criminal Justice. Initially, I knew little about nuclear energy, but once I started working at my first site, I discovered the vast opportunities the nuclear field offers. I quickly learned that nuclear has a job for everyone.

I was fortunate to have the opportunity to return to school and obtain my Masters in Business Administration, which significantly enhanced my growth. After completing my degree, I transitioned out of my Security role and moved into Supply Chain, where I continue to advance my career.

My biggest advice to anyone entering the nuclear industry is to always keep your options open and take advantage of any growth opportunities that come your way.

Justin Roberts

Procurement Manager at Constellation – Crane Clean Energy Center

A DAY IN THE LIFE

of a Probabilistic Risk Assessment Engineer

I work for a nuclear vendor as a PRA engineer. I received a Bachelor's in Nuclear Engineering from North Carolina State University. Day to day, I am responsible for developing and communicating risk insights to optimize system and component design for reliability and safety to support licensing of the BWRX-300 small modular reactor (SMR). Risk insights come from risk models that my team and I develop and maintain. The purpose of this job is to ensure the health and safety of the public from a regulatory standpoint.

As a PRA Engineer, I have had the opportunity to get a detailed viewpoint of the systems within the plant and their interactions and contribution to core damage frequency and radioactive release frequency. There is also a human factor engineering aspect to being a risk engineer where the procedures and subsequent actions of nuclear operators are assessed and given risk values. From a new nuclear perspective, PRA is able to guide decisions for technical specifications, operator actions, plant design, and more. I enjoy how diverse my work scope is everyday and the opportunity to dip my toes into a lot of different puddles.

There are a couple pieces of advice I have taken with me throughout my career:

1. Don't look back. There will be opportunities and choices that you make throughout your career and the best thing to do is to look towards the future and keep going.
2. Setting goals is important but you won't know what you want in 5 years until 5 years from now. If anything has been evident in my career so far, it's that you don't know what you don't know and as you learn more about yourself, you will pivot and that's okay. The unknown is where growth happens and when you're growing, refer to advice #1.

Shana Johnson

Probabilistic Risk and Reliability Engineer at GE Vernova

A DAY IN THE LIFE

of a
Project Controls Consultant

I am currently employed by a consulting firm as a Project Controls Senior Consultant and Project Manager. In this capacity, I support program managers by overseeing the management of project budgets, comparing proposed budgets against actual expenditures, both in monetary terms and labor hours. My responsibilities also include developing and managing project schedules, as well as creating, managing, and closing project authorizations and funding, which encompasses contract management.

I hold a Bachelor of Science in Bio-Textile Engineering from North Carolina State University. As a Project Controls Senior Consultant and Project Manager, I am tasked with evaluating the budgets authorized for each project based on specific scopes of work. I monitor expenditures closely, ensuring alignment with budgeted amounts for both financial spending and labor hours, as these are critical components of our proposals to clients.

In addition to budget oversight, I construct and manage project schedules, which provide me with a comprehensive understanding of each project's scope of work. This in-depth knowledge allows me to effectively monitor the various tasks and activities outlined in the schedule. I diligently ensure that scheduled activities align with budget expectations. When discrepancies arise, I engage with the project team to identify the underlying factors contributing to the variances in cost and schedule.

One piece of advice that has profoundly influenced my career is a statement made by a colleague early in my journey: "There is no such thing as a stupid question, and everyone must start somewhere." They recognized my potential and enthusiasm as a new entrant in the field, encouraging me to persevere until I found my rhythm. Over time, that guidance proved invaluable, and I have developed a deep passion for the nuclear industry, with no intention of looking back.

Ashleigh Lyons

Project Controls Senior Consultant/Project Manager at Sargent & Lundy

A DAY IN THE LIFE

of a

Nuclear Fuels Engineer

I work for a utility company as a Nuclear Fuels Engineer in the core design group. My background is in nuclear engineering, and I use that foundation daily in support of reactor operation. Our goal is to design core loading patterns that meet all licensing requirements, optimize fuel utilization, and ensure uninterrupted plant operation. We perform the core design and associated safety analyses needed to license each cycle, verifying that the core meets all regulatory and internal safety limits. Once approved, we provide the final design and reactivity predictions to the site, who uses them to start up the new core and operate the cycle.

As a Nuclear Fuels Engineer, I spend most of my time in the office performing physics-based engineering calculations using industry-standard neutronics codes, along with a set of internal Python and Excel tools. My work is rooted in neutron transport theory and nuclear physics — understanding how neutrons behave inside the core is essential to making smart, safe, and efficient design decisions. Although the role is primarily office-based, I also provide on-site support during startup physics testing, helping resolve any issues or questions that arise as the plant begins operation with a new core.

One piece of advice that stuck with me early on was to focus on developing physical intuition — not just running calculations and accepting the output, but understanding why the results make sense. That mindset has helped me approach every problem with more confidence, especially when things don't go as expected.

Drew Shayotovich

Nuclear Fuels Engineer at Duke Energy

A DAY IN THE LIFE

of a

Nuclear Fuels Engineer

I work for a commercial nuclear power company that makes and sells electricity as a nuclear fuels engineering analyst. Although I am performing an engineering function, my degree is in Nuclear Energy Engineering Technology, which is not an engineering degree. I have held several roles throughout my career, including nuclear power plant operations, maintenance, work control, and innovation. Our industry is very flexible and has many ways to meet qualifications, even if your degree is not in the same discipline as your job.

As a nuclear fuels engineering analyst, I predict on a high level how nuclear fuel will be used to achieve the optimal power output for a reactor. This includes running computer programs to model how the core will perform for different conditions like higher or lower coolant rates and different patterns of control rod usage. I create technical reports to document the results of the predictions. I regularly communicate with other fuels engineers, the power plant staff, and external vendors to make sure all our predictions are on-track and any deviations are fully investigated and addressed appropriately. The data I collect is fed back into the computer programs to further refine future predictions.

Early in my career, I learned how important it was to connect with other people. When there are things that I don't know about my job, I know who to talk to for help or more understanding. No one can do everything on their own and it is so important to develop those relationships with others to fill the gaps.

Paula Rusenovich

Nuclear Fuels Engineering Analyst at Constellation

A DAY IN THE LIFE

of a
Cyber Security Data Scientist

I work for a renewable energy company with a hefty nuclear portfolio as a data scientist in cyber compliance. I create dashboards and analyze data on all plant assets with any sort of digital component that can connect to plant networks. I consolidate this data and make it easy for our plant personnel to monitor the cyber health of our nuclear fleet and how we are performing in terms of adherence to Nuclear Regulatory Commission compliance.

Day to day, I spend a lot of time gathering business requirements, analyzing data sources and their quality, maintaining and building dashboards, and communicating any key findings to leadership. My undergraduate degree was in Management Information Systems which was in my school's college of business. Once I entered the work force, I realized I wanted to be in a more technical role and decided to pursue a master's in data science. My background in business provides a solid understanding on how to tie my findings to business value for our company.

One piece of advice that stood out to me was "your network is your net worth." Through my amazing network, I learned more about data science and decided to pursue it as a career. Even my role in NAYGN was recommended to me by a rockstar within my network. It really goes to show you never know who will knock on your door with a great opportunity.

Sonia Chakraborty

Data Scientist at NextEra Energy

A DAY IN THE LIFE

of an
I&C Systems Engineer

I work for a commercial nuclear power plant as an Instrumentation & Controls (I&C) Systems Engineer. My degree is in electrical engineering, and my role bridges the gap between analog reliability and modern digital integration. I support instrumentation systems that monitor and control energy in the plant to ensure its reliable, optimal, and safe operation.

As an I&C Systems Engineer, I am responsible for a broad range of systems, which provide an overall control scheme to move energy around the plant. This ranges from feedwater control, reactor control through process inputs, and rod control. My time is spent doing several things, but the way it typically unfolds is:

- A condition report will describe an abnormal / urgent issue related to one of my systems, and I will work within existing plant processes to correct the identified condition(s) for the long-term.
    - This could range from requesting maintenance to be performed, simple paperwork evaluations to justify why the condition is acceptable, or design changes to implement a different, but better solution.
- Each day is dynamic, but the key to success in this role is building the right relationships, having a field presence, and process knowledge. These ingredients work synergistically to allow me to remove barriers and successfully champion solutions that lead to long-term plant reliability.

The advice that stuck with me early on was, "Visibility is just as important as solving problems." Getting eyes on the actual equipment, creating relationships with your stakeholders, and understanding how your system supports/affects the plant is the recipe to success for solving the most confusing technical problems.

Andrew DiGuilio

I&C Systems Engineer at Palo Verde Generating Station

A DAY IN THE LIFE

of an
Administrative Assistant

I work for Southern Nuclear, which is one of the nation's top nuclear energy operators. I am an Administrative Assistant in the Site Projects Department. I have a Bachelors Degree in Criminal Justice. My day usually starts with checking emails and calendars—making sure meetings are scheduled, documents are ready, and everyone knows where they need to be. I help coordinate events, support project teams, and make sure communication flows smoothly between departments.

One of the coolest parts of my job? I get to work with engineers, scientists, and leaders who are shaping the future of clean energy. I help them stay focused by handling the behind-the-scenes details—like preparing reports, organizing training sessions, and even helping with community outreach events.

You don't need a nuclear engineering degree to make a big impact in the nuclear industry—and I'm proof of that! As an administrative professional, my job is all about keeping things organized, efficient, and moving forward.

Even though I'm not designing reactors or running simulations, I'm part of a team that's powering homes and protecting the planet. It's exciting, fast-paced, and full of opportunities to learn and grow.

So if you're organized, love working with people, and want to be part of something meaningful—there's a place for you in nuclear, no matter your degree! One piece of advice that has stuck in my head is to always be working towards a bigger goal and to never stop learning.

Christine Brown

Administrative Assistant at Southern Nuclear

A DAY IN THE LIFE

of a
Design and Piping Engineer

I work for a global Engineering, Procurement and Construction (EPC) company, where we are supporting the design and construction of a First of a Kind (FOAK) advanced nuclear reactor. In my role as Plant Design and Piping Engineer, I am on the software automation side of Plant Design. I work in parallel with different engineering disciplines to ensure an up-to-date 3D design model of the advanced nuclear reactor. This 3D model will serve as a real-time guide during construction.

While other engineering disciplines (Civil, Electrical, Mechanical, and Instrumentation & Control) are developing their system design calculations and modifications (known as inputs), Plant Design and Piping Engineers are creating the digital 3D model. Sometimes those design inputs are not found in the 3D modeling software - that's where I come in! I am involved in creating and automating the testing and validation of these design inputs and creating digital databases of the design input components. If a Plant Design Engineer comes across errors while placing the components, I troubleshot the error and figure out if there are any discrepancies with the component in the model or design.

My degree background is in Mechanical Engineering, which helps in my role as it requires me to be knowledgeable with different codes and standards established by organizations such as the American Society for Testing and Materials (ASTM) and the American Society of Mechanical Engineers (ASME).

One piece of advice I was given early in my career was to have a "Questionable Attitude". When in doubt, ask the question! We don't always have answers, but that's okay, someone else may have them! It's important to reach out to others when in doubt, and to not be shy about it!

Jocelyn Alvarez

Plant Design and Piping Engineer at Bechtel Corporation

A DAY IN THE LIFE

of a
Project Manager

I work for a nuclear fuels vendor as a Fuels Project Manager. In this role, I collaborate with a team of multidisciplinary engineers and technicians to ensure the safe and economical licensing and delivery of nuclear fuel to reactors worldwide. Every day presents new challenges—whether technical, logistical, or business-related. I rely on my engineering degrees (B.S. Nuclear/ Mechanical, M.Eng. Nuclear) to help engineers navigate complex issues while keeping economic viability in mind.

As a Project Manager, I have gained broad knowledge across various aspects of our business. The projects I oversee go through multiple stages: First, an initial conceptual design of a fuel assembly is created, ensuring customer requirements are met and that the product's manufacturability is within our capabilities. Next, we collaborate with customers to determine the economic viability of the fuel cycle. Finally, we work on licensing the fuel using some of the most advanced codes and methods approved by the NRC. While licensing is in progress, I focus on our manufacturing facility, ensuring high-quality products are produced and transported safely to customers without issue. Throughout the entire project, I monitor three key areas: the scope of the project, its progress, and budget performance.

Early in my career, I started as an engineer, as most with an engineering degree do. However, I found myself with the unique opportunity to explore and choose projects that interested me. While I completed my assigned work, I also took the initiative to get involved in unique projects. I attribute this opportunity to two key factors: First, I asked others what they were working on and remained genuinely interested. Second, I developed a reputation for being hardworking and results-driven. Prioritizing deliverables over hours worked opened more doors for me than the average engineer.

Another valuable piece of advice: Attend company functions, especially early in your career. While work-life balance is important, make an effort to participate in these events. You will meet like-minded coworkers, future mentors, and company leaders. Never underestimate the power of building a strong network.

CJ Markum

Project Manager at Framatome Inc.