February 19-20, 2020
Hyatt Centric Midtown Atlanta
Atlanta, GA

INTRO TO NUCLEAR POWER PLANT EMERGENCY PLANNING

February 20-21, 2020
Hyatt Centric Midtown Atlanta
Atlanta, GA

“Great course for attendees who are inexperienced with the operations of a NPP. Regardless of your background (technical or otherwise), there is a lot to learn from this course.”

Engineer/Scientist III, EPRI
OVERVIEW

The nuclear power plant (NPP) operations course provides attendees with a clear understanding of how these powerful plants function and produce electricity. The course describes how plants are built, how a nuclear startup is conducted, and how the plant is taken from cold iron to 100-percent power. Plant staffing and full power operations will be addressed including boration/dilution, fuel rods, and electrical load. Functions of components of the balance-of-plant (outside of the nuclear island) will be described (turbines, generators, and cooling systems). The inherent stability and safety systems of nuclear plants will be covered in detail. Procedures for conducting a refueling outage and discussion of major outage tasks, including refueling, CEA changeouts, component rebuilds, and surveillance testing will be conducted. Participants will complete the course with full comprehension of and appreciation for the functions of the NPP and the production of electricity in the nuclear environment.

Topics include:
- The fission process, plant startups, and how reactors work
- How plants are staffed and what positions are required in a nuclear plant
- Thermal cycle, heat transfer, and the components of a nuclear plant
- How electricity is produced in a nuclear power plant
- The intricacies of plant safety systems
- What is required in managing refuel outages and how nuclear fuel reloads are accomplished

LEARNING OUTCOMES

- Describe how fission is accomplished and the basics of how a nuclear reactor produces energy
- Explain the three loops in a nuclear plant
- Examine the staffing and personnel assignments required in a nuclear plant
- Discuss the thermal cycle and describe heat transfer and fluid flow
- Identify the major components of a nuclear power plant including generators, turbines, and cooling systems
- Discuss normal nuclear power plant operations and compare the variations in startup, steady-state operations, and shutdowns
- Examine nuclear power plant safety systems and the concepts of redundancy and defense-in-depth
- Describe the requirements associated with a refuel outage and nuclear fuel reload

WHO SHOULD ATTEND

- All employees whose jobs require a working knowledge of nuclear power plant operations
- Personnel in the energy industry who are newly assigned to nuclear generation
- Contractors involved with nuclear plant operations, maintenance, and specific projects
- Employees who require a job-related understanding of the operations of nuclear power plants
- Public affairs and public relations personnel who need an understanding of nuclear energy
- Executives and managers who require training in nuclear power plant operations
- Engineers with responsibilities in nuclear power
- Suppliers and vendors involved in the procurement cycle for new and existing nuclear plants
- Attorneys and paralegals whose work is directly or indirectly involved with nuclear energy

“Excellent overview of nuclear power plant operations.”
Principal Engineer, Austin Energy

“Fantastic – did not speak over our head, was able to relay info in comprehensive examples. My concerns that the class would exceed my comprehension level diminished right away.”
Chief Estimator, Graycor
AGENDA

WEDNESDAY, FEBRUARY 19, 2020

7:30 – 8:00 am  
**Registration and Continental Breakfast**

8:00 – 10:00 am  
**Course Introduction**
- Fission process
- Reactor coolant system (RCS) explanation
  - Reactor Core and associated Loops
  - Secondary plant
  - Heat rejection methods
- Plant staffing
- Technical specifications
  - Why they exist
  - Basic rules of use
- Procedures and their hierarchy

10:00 – 10:15 am  
**Morning Break**

10:15 am – 12:00 pm  
**Thermal Cycle**
- Basic heat transfer and fluid flow
  - PSAT/TSAT
  - Latent heat
- Major systems within a nuclear plant
  - RCS
  - Steam generators and their support systems
  - Main turbine
  - Main generator
  - Chemical Volume Control
  - Cooling systems

12:00 – 1:00 pm  
**Group Luncheon**

1:00 – 2:45 pm  
**Plant Safety Systems**
- Interrelationships
- Redundancy
- Accident conditions
  - High/low pressure injection
  - Containment spray
  - Recirculation actuations
  - Auxiliary feedwater
  - Emergency diesel generators
  - Ventilations systems

2:45 – 3:00 pm  
**Afternoon Break**

3:00 – 5:00 pm  
**Normal Plant Operations**
- Plant startup
- Steady-state operations
- Plant shutdown

5:00 pm  
**Day 1 Wrap-Up**

---

“Great course with quality content packed into a short time. Excellent take away reference! Highly recommend! Illustration pictures were great learning enforcement.”

Technical Advisor, EPRI

“Very informative, very interactive and very entertaining! This course helped me better understand how a nuclear plant operates, shuts down, refuels and reconnects into the grid.”

Applications Engineer, Diaknot

“Class information was easy to follow and understand. The instructor kept the class engaged and interested.”

Nuclear Program Manager, Duke Energy
# AGENDA

**THURSDAY, FEBRUARY 20, 2020**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 8:30 am</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:30 – 10:15 am</td>
<td>Refueling Outage</td>
</tr>
<tr>
<td></td>
<td>•Cooldown/depressurization</td>
</tr>
<tr>
<td></td>
<td>•Destock</td>
</tr>
<tr>
<td></td>
<td>•Mode 6 and defueled</td>
</tr>
<tr>
<td></td>
<td>•Offload</td>
</tr>
<tr>
<td>10:15 – 10:30 am</td>
<td>Morning Break</td>
</tr>
<tr>
<td>10:30 – 11:45 am</td>
<td>Reload</td>
</tr>
<tr>
<td></td>
<td>•Restack</td>
</tr>
<tr>
<td></td>
<td>•RCS fill/vent</td>
</tr>
<tr>
<td></td>
<td>•Heat-up</td>
</tr>
<tr>
<td></td>
<td>•Mode changes</td>
</tr>
<tr>
<td></td>
<td>•Major outage work/testing</td>
</tr>
<tr>
<td>11:45 am – 12:00 pm</td>
<td>Course Wrap-Up, Assessment, and Conclusion</td>
</tr>
</tbody>
</table>

---

## COURSE INSTRUCTOR

Mr. Ronald L. York  
**Nuclear Industry Consultant**

Mr. York has more than 35 years of experience in the commercial nuclear power industry. Ron began his career as a naval submarine reactor operator, followed by several years of building submarines at Electric Boat. He began working in the commercial nuclear industry as a cold licensed senior reactor operator (SRO) at Waterford 3 outside New Orleans shortly after the Three Mile Island event. Ron served in many capacities with Entergy and six other nuclear power companies. During his career, besides holding an active NRC SRO license until 1990, he held multiple SRO certifications and worked at both Combustion Engineering (CE) and Westinghouse sites. Ron has been a control room supervisor, refueling supervisor, outage and containment coordinator, emergency plan writer /drill controller, and operations procedure writer. He was INPO certified as a Simulator and Classroom Operations Instructor and has written numerous operation and management training curricula, and presented lectures and simulator training in nuclear power plant operations for initial licensed operator candidates, requalification training for licensed and senior licensed operators, Shift Technical Advisors (STAs), senior management, and has written and administrated NRC initial and requalification exams.

---

“Very good presentation, got to learn very important things in a short time.”  
Engineer, Western Services Corporation

“This course provided an excellent overview of nuclear power plant design, operation, and safety considerations.”  
President, EJCON Corp.
OVERVIEW

The Nuclear Power Plant (NPP) Introduction to Emergency Planning course provides attendees with a clear understanding of how these powerful plants plan to protect the public if a casualty occurs. The course will describe: how plants are built for safety, the inherent stability of nuclear plants, what decay heat and radiation is, how radiation release is minimized, how the emergency plan is developed, and how the emergency plan is tested. Functions of nuclear safety components of the nuclear plant site will be described (containment, containment spray, safety injection, decay heat removal). Plant staffing and roles will be addressed including critical and non-critical personnel. Requirements for conducting an emergency drill and discussion of major drill tasks and roles of supporting agencies will be presented. Participants will complete the course with full comprehension of, and appreciation for, the functions of the NPP and the protections of the public in the nuclear environment.

Topics include:
The following emergency planning topics and areas of interest will be discussed over a day and a half:

- Why Nuclear Power
- Basic PWR and BWR Difference Review
- Basic Reactor Safety Systems
- 10CFR Safety System Design Objectives
- Reactor Accidents and Anticipated Operational Occurrences Explained
- Radiation Types and Their Biological Effects
- 10CFR Allowed Doses for Normal and Accident Conditions
- Emergency Planning Goals
- NRC, INPO, State and Local Responsibilities
- Emergency Planning Classifications
- NUREG 1022 Review for Emergency Planning
- Emergency Planning Zones
- Protective Action Recommendations
- Examples of Initiating Conditions
- Essential Personnel Roles and Responsibilities
- Basic Log keeping
- Communication Systems
- Drill/Exercise Development and Testing

LEARNING OUTCOMES

Upon course conclusion the attendee should be able to:

- Discuss why we need nuclear power and its rewards
- Identify basic design differences of PWR and BWR nuclear plants
- Describe nuclear power plant safety systems, concepts of redundancy, and defense-in-depth for mitigating accidents
- Identify the design objectives, major components, and functions of nuclear power plant safety systems
- Describe site staffing and personnel assignments required for emergency planning
- Discuss the roles of Federal, State, and local agencies responsible for emergency planning
- Identify the emergency planning zones of concern, and the related protective action guidelines associated with accidents
- Provide examples of accident types and initiating conditions for activating the emergency plan
- Describe the requirements and goals associated with the planning and conducting of an emergency plan drill

WHO SHOULD ATTEND

- All employees whose jobs require a working knowledge of nuclear power plant emergency planning
- Personnel in the energy industry who are newly assigned to nuclear generation
- Contractors involved with nuclear plant operations, maintenance, and specific projects
- Employees who require a job-related understanding of nuclear power plant emergency planning
- Public affairs and public relations personnel who need an understanding of the basic function and purpose of the emergency plan
- Executives and managers who require training in nuclear power plant emergency planning
- Engineers with responsibilities in nuclear power
- Suppliers and vendors involved in the procurement cycle for new and existing nuclear plants
- Attorneys and paralegals whose work is directly or indirectly involved with nuclear energy
AGENDA

THURSDAY, FEBRUARY 20, 2020

1:00 – 1:30 pm  Registration

1:30 – 3:30 pm  Course Introduction and Nuclear Design Presentation
  • Why Nuclear Power?
  • Basic PWR and BWR Review
    o PWR Design
    o BWR Design
  • Basic Reactor Safety Systems
    o Barriers to Radiation Release
    o Containment
    o Containment Spray
    o Safety Injection
    o Decay Heat Removal
  • 10CFR Safety System Design Objectives

3:30 – 3:45 pm  Afternoon Break

3:45 – 5:00 pm  Accidents and Radiation
  • Reactor Accidents and Anticipated Operational Occurrences
  • FSAR Accident Analysis
  • Radiation Types and Their Biological Effects
    o Alpha
    o Beta
    o Gamma
    o Neutron
    o Penetration Power and Biological Effects
  • 10CFR Allowed Doses for Normal and Accident Conditions

FRIDAY, FEBRUARY 21, 2020

8:00 – 8:30 am  Continental Breakfast

8:30 – 10:15 am  Emergency Planning Goals
  • Emergency Planning Goals
  • What is INPO and NEI and Their Role
  • Federal, State, Local Responsibilities

10:15 – 10:30 am  Morning Break
### AGENDA

**FRIDAY, FEBRUARY 21, 2020 (CONTINUED)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 10:30 am – 12:00 pm | **Emergency Planning Classifications**  
- NUREG 1022 Explained  
- Emergency Planning Classifications  
- Emergency Planning Zones  
- Protective Action Recommendations  
- Examples of Initiating Conditions |
| 12:00 – 1:00 pm   | **Group Luncheon**                            |
| 1:00 – 2:45 pm   | **Personnel and their Roles**  
- Essential Personnel Roles and Responsibilities  
- Basic Log Keeping  
- Basic Communication Systems |
| 2:45 – 3:00 pm   | **Afternoon Break**                           |
| 3:00 – 4:45 pm   | **Drill Development and Evaluation**  
- Drill/Exercise Development and Testing |
| 4:45 – 5:00 pm   | **Course Wrap-Up, Assessment, and Conclusion** |

### COURSE INSTRUCTOR

**Mr. Ronald L. York**  
**Nuclear Industry Consultant**

Mr. York has more than 35 years of experience in the commercial nuclear power industry. Ron began his career as a naval submarine reactor operator, followed by several years of building submarines at Electric Boat. He began working in the commercial nuclear industry as a cold licensed senior reactor operator (SRO) at Waterford 3 outside New Orleans shortly after the Three Mile Island event. Ron served in many capacities with Entergy and six other nuclear power companies. During his career, besides holding an active NRC SRO license until 1990, he held multiple SRO certifications and worked at both Combustion Engineering (CE) and Westinghouse sites. Ron has been a control room supervisor, refueling supervisor, outage and containment coordinator, emergency plan writer/drift controller, and operations procedure writer. He was INPO certified as a Simulator and Classroom Operations Instructor and has written numerous operation and management training curricula, and presented lectures and simulator training in nuclear power plant operations for initial licensed operator candidates, requalification training for licensed and senior licensed operators, Shift Technical Advisors (STAs), senior management, and has written and administrated NRC initial and requalification exams.
REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

INSTRUCTIONAL METHODS

PowerPoint presentations and classroom discussions will be used in this course.

IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.1 CEUs for the course.

EVENT LOCATION

A room block has been reserved at the Hyatt Centric Midtown Atlanta, 125 10th St NE, Atlanta, GA 30309, for the nights of February 18 – 20, 2020. Room rates are US $209 plus applicable tax. Call 1-404-443-1234 for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is January 18, 2020 but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

REGISTER 3, SEND THE 4TH FREE

Any organization wishing to send multiple attendees to this course may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.
Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before January 17, 2020 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices.

Special Bundle Price

Nuclear Power Plant Operations and Introduction to Nuclear Power Plant Emergency Planning Courses
FEBRUARY 19-21, 2020: US $2395
Early bird on or before January 31, 2020: US $2195

Introduction to Nuclear Power Plant Emergency Planning Course Only
FEBRUARY 20-21, 2020: US $1395
Early bird on or before January 31, 2020: US $1195

Nuclear Power Plant Operations Course Only
FEBRUARY 19-20, 2020: US $1395
Early bird on or before January 31, 2020: US $1195

Print Name

Job Title

Company

What name do you prefer on your name badge?

Address

City

State/Province

Zip/Postal Code

Country

Phone

Email

List any dietary or accessibility needs here

Credit Card Information

Name on Card

Billing Address

Account Number

Billing City

Exp. Date

Billing State

Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)

Billing Zip Code/Postal Code

OR Enclosed is a check for $ ______________ to cover ______________ registrations.

Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before January 17, 2020 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices.

Event Location

A room block has been reserved at the Hyatt Centric Midtown Atlanta, 125 10th St NE, Atlanta, GA 30309, for the nights of February 18 – 20, 2020. Room rates are US $209 plus applicable tax. Call 1-404-443-1234 for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is January 18, 2020 but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

Energize Weekly

Energize Weekly is EUCI's free weekly newsletter, delivered to your inbox every Wednesday. We provide you with the latest industry news as well as in-depth analysis from our own team of experts. Subscribers also receive free downloadable presentations from our past events.

Sign me up for Energize Weekly