

# Conduct of Plant Operations

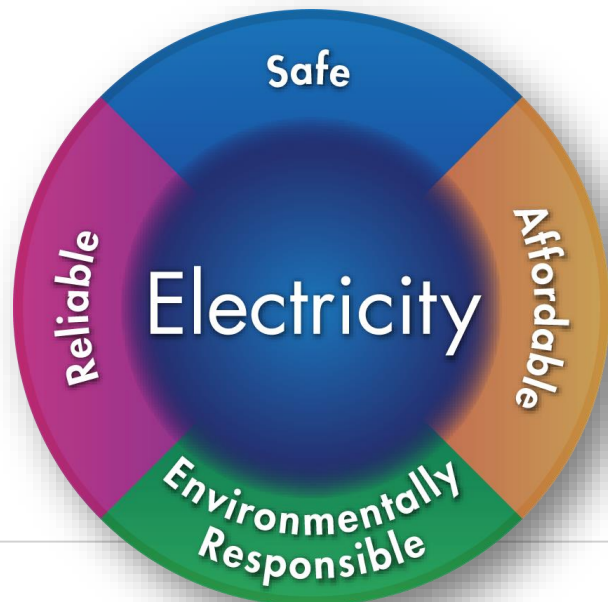
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Operations and Management  
Technology



# Electric Power Research Institute

## EPRI's Mission

Advancing **safe, reliable, affordable, and environmentally responsible** electricity for society through global collaboration, thought leadership and science & technology innovation



## Three Key Aspects of EPRI



### Independent

Objective, scientifically based results address reliability, efficiency, affordability, health, safety, and the environment

### Nonprofit

Chartered to serve the public benefit

## Our Members...

- 450+ participants in more than 30 countries
- EPRI members generate approximately 90% of the electricity in the United States
- International funding – nearly 25% of EPRI's research, development, and demonstrations

### Collaborative

Bring together scientists, engineers, academic researchers, and industry experts



# Operations Management & Technology (108)

*Focuses on technology and human aspects of non nuclear power plants to support improved plant performance and reduced costs.*



- Conduct of Operations tool provides standardized approaches and best practices for day-to-day plant challenges.
- Continuous Improvement initiatives that enhance root cause analysis, self assessment and corrective action programs.
- Operational strategies and approaches to improve plant flexibility, plant layups and turndown goals.
- Guidance on work management processes, procedures, and lockout-tagout programs.
- Training program and simulator developments to improve initial and recurring training of operational staff.
- Guidelines and best practices in developing and implementing an alarm management program across an operating fleet.

**Program addresses key challenges facing fossil plant operators.**

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# Introduction

- All well run companies have a defined “Conduct Of Operations”. This provides a framework for management to communicate high standards and expectations for the plant operations group.
- The most important measures of a successful of this program are the following:
  - The ability of the station to meet operational goals and commitments such as reliability, environmental compliance, and on-time commitments in a safe and cost-effective manner.
  - Management of off-normal conditions to protect equipment, staff, the environment, and the public.
  - Accurate event reporting and the ability to communicate the lessons from the event, minimizing recurrence of similar types of events.
  - The control of accidents, injuries, close calls, and events that occur at a station with an ongoing, measurable reduction of such events over time.



# Overview

- The Conduct of Operations establishes responsibilities, standards, and expectations for areas within plant operations.
- We will briefly discuss some key areas from a high level perspective.

# Responsibilities of Plant Management

- Identifying financial needs and relative risks and developing the long-range plan and budget to run the plant within the established standards
- Monitoring station operations for compliance with safety and regulatory requirements
- Establishing and enforcing high standards of performance
- Maintaining a questioning attitude and promoting this attitude among the workers.
- Demonstrating and coaching expected behaviors to make better decisions in the future on priorities by coaching the staff to make the right decisions on their own.
- Verifying that individuals are qualified for the work they are performing
- Provide continuous employee feedback and coaching
- Establishment and participation in a station observation program

# Responsibilities of the Operations Department

- Supporting site safety program and protecting personnel safety
- Controlling plant generating equipment
- Ensuring environmental compliance
- Scheduling and performing safe, reliable, and efficient startups, operations, and shutdowns of plant systems and components
- Leading work management process
- Understanding risks to production and mitigating risks during critical operations
- Communicating with appropriate on-site and off-site organizations as required
- Conducting surveillance procedures
- Trending system parameters, monitoring performance
- Ensure workers are trained and knowledgeable for assigned task

# Each Operator

- Achieve compliance with expectations established by management and identify departures from industry best-practice guidance as part of continuous improvement practices.
- Enforce these standards and expectations with people with whom they interface and carry these standards over to all other plant personnel.



# Safety

- Operations personnel have a crucial role in ensuring that personnel, environmental, and industrial safety remain top priorities—with personnel safety of primary importance.
- Safety must be established as the overriding priority in all aspects of plant operation and be at the forefront of all operational decisions.

# Housekeeping

- Housekeeping is a high-level safety concern.
- Good housekeeping is everyone's responsibility. All work groups, including Operations, should do their part in maintaining the material condition of the plant to ensure a safe, orderly work environment and exemplary operating condition for personnel and equipment.

# Shift Turnover

- The objective of turnovers is to ensure on-coming operators are cognizant of plant status and any safety concerns and activities occurring in their area of responsibility.
- Improving shift turnover and log keeping is a low-cost method of improving staff and plant performance.

# Pre-Job Brief

- A key tool to prevent human performance errors and improve plant reliability.
- Level of detail and formality of a pre-job brief vary depending on the complexity/potential consequences of the activity.

# LOTO/Clearance Process

- Critical for the protection of workers and equipment and for the performance of effective operations and maintenance of any fossil generating power plant.
- Designed to identify sources of energy and hazardous materials that could adversely affect maintenance activities, isolate all such sources from the work area, and ensure that the isolation remains effective until the work is completed.

# Control Room Conduct

- Standards for control room conduct include:
  - Maintain a professional attitude, which in turn contributes to the safe, reliable operation of the plant.
  - Keep the control room free of distractions and situations while monitoring station controls and limiting access to the control room. (phone calls, too many people)



# Human Performance

- All humans make mistakes.
- These mistakes can be compounded by the failings of equipment, flawed processes and programs, and uninformed decisions.
- There are human performance tools to help identify and mitigate hidden conditions and situations that could cause injury to people and damage to the plant.
- Some key ones are:
  - self-checking,
  - peer checking,
  - independent verification,
  - 2-minute rule,
  - questioning attitude.

# Log Keeping

- Logs are a chronological record of plant activities, equipment function, and events. They may be electronic or handwritten. This set of notes or statements is maintained in near real time as situations and activities occur.
- Logs are key in the reconstruction of an event or other matters and should meet high standards for accuracy and consistency. (May be used as legal documents)

# Operator Rounds


- The plant operations group at each plant should have specific policies and procedures governing the conduct of equipment operator walkdowns that define how the rounds are developed and what actions should occur with their frequency.
- Rounds are not for the sole purpose of collecting data but as a walkdown, hands-on evaluation using the senses.
- Rounds are one of the key mechanisms in a successful Equipment Reliability program.

# EPRI Reference Material

Fossil Power Plant Conduct  
of Operations Guideline

*An Overview of Key Operating Practices*

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# Questions





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