

# Operations Management & Technology - Program 108

## Program Overview

### Program Description

Operations performance in today's fossil generation plants is the key to achieving highly reliable, safe, economic, and environmentally compliant plant performance. The operations staff and management provide the human performance that controls the operation, directs and performs equipment condition monitoring, and performs predictive and corrective maintenance activities. Work processes, clear goals and objectives, personnel development, communication, support facilities, and plant design also play a significant role in the overall plant performance. Effective integration of wide-ranging skills and knowledge, work processes, and design — along with strong leadership by the management team — are critical to plant success.

The Electric Power Research Institute's (EPRI's) Operations Management & Technology program (Program 108) provides a forum for the development and evaluation of new and improved fossil plant operations technologies, work policies, and practices that raise standards of operational performance.

### Research Value

EPRI's Fossil Operations Program develops advanced processes and related technology that support improved plant reliability and reduced costs. The programs address the key tactical challenges facing fossil plant owners relating to the management, conduct of operations, workforce performance, equipment monitoring, and risk. These programs are highly collaborative in nature, providing forums for EPRI members to jointly resolve issues, improve processes, and identify research gaps. Members of the Operations Management & Technology program receive:

- Guidelines that provide tools for excellence in plant operations
- Forum for industry information exchange
- Improved plant operations through support from EPRI technical staff
- Opportunities for enhanced plant operations through understanding of new technology applications

### Approach

This program helps operating crews apply industry best practices and understand new technologies, and the ways both can be applied to plant operations to identify vulnerabilities, manage risk, and exchange information with peers.

- R&D for plant operations fundamentals and new developments provides guidance to plant operators and their managers on best practices in fossil plants through exchanges of ideas and shared lessons on improved operational performance and new technologies.

### Accomplishments

EPRI's Operation Management and Technology has helped members through implementation of products to assess operations performance, improve operations processes, learn from industry experiences, and exchange ideas with industry peers. Products have included:

- *Updated Operations Assessment Guideline*, which helps members understand their strengths and areas for improvement in operations. The guideline is updated based on members' experiences.
- Annual operations conferences, which allow industry peers from shift operations to share experiences, problems, and solutions
- Lessons learned from industry events, which provide information about prevention of similar events at other facilities
- Guideline on managing emergency events

- Guideline on clearance and tagging
- Guideline on alarm management

### Current Year Activities

The program R&D for 2010 will focus on continuing to develop guidelines that support excellence in fossil operations, sharing of lessons learned from industry case histories, reviewing technology applications, and fostering information exchange among the membership. Specific efforts will include:

- Annual operations and future operations perspectives conference
- Annual case history report
- Hot-line support of members
- Conduct-of-operations guideline on topic selected by advisors
- Guidelines on managing plant documents that accurately describe the configuration of the as-built facility
- Guidelines on operations performance to enhance overall outage results
- Results from operations assessment activities

### Estimated 2010 Program Funding

\$0.8M

### Program Manager

Wayne Crawford, 704-595-2233, [wcrawford@epri.com](mailto:wcrawford@epri.com)

## Summary of Projects

Project Number	Project Title	Description
P108.001	Plant Operations Fundamentals and New Developments	This project provides guidance on industry best practices for plant operations, evaluates technology applications, and supports information exchange among members to foster continuous improvement of fossil plant operations.

### **P108.001 Plant Operations Fundamentals and New Developments (067361)**

#### Key Research Question

Clear descriptions of best-practice performance and benefits of new technologies for operations are needed to support industrywide improvement efforts. Plant operations staffs need effective information sharing to learn from the experiences of others.

#### Approach

This project provides the ability to exchange information among members and develops guidance to improve plant operations activities. Information exchange is facilitated through an annual conference. EPRI staff provides hot-line support, which often includes input from other members. A full set of Conduct of Operations Guidance is being developed to capture the best operational performance practices and provide detailed information on the conduct of operations, based on member rankings of importance. Reports on new technology developments offer insight into application successes and problems. Supplemental projects assist members with product applications when required.

## Impact

- Improved plant operations result in lower cost and increased generation.
- Plants can avoid negative events by studying industry experiences and taking preemptive corrective action.
- Savings and performance improvements are gained by learning from others' experiences to effectively implement new technologies.
- Fewer operator errors and improved response to events reduce impact on plant equipment, prevent outages, and result in increased production.

## How to Apply Results

Plant operations staff compare their existing practices with those reported in guidelines to determine areas that can be improved through new or revised procedures, instructions, training, and management coaching. Lessons learned through event reviews or operations conferences are evaluated in the plant to determine if changes to operational practices are required. New technologies applied using ideas from EPRI guidance or industry experience achieve maximum value with minimum impact on plant staff.

## 2010 Products

Product Title & Description	Planned Completion Date	Product Type
<p><b>Conduct of Operations – Topic to be selected by advisors:</b> Over several years, a comprehensive collection of guidelines is being developed that will result in most areas needed for a conduct-of-operations procedure. Each year, advisors will select the next topic for the series of reports based on their understanding of current needs within the industry. A number of topics have not been completed and will be ranked for 2010 delivery, including log keeping; shift turnover; communications; housekeeping and material condition; managing complex and coordinated activities, and operational aides control and use.</p>	12/31/10	Technical Report
<p><b>Mentoring and OJT Guidelines:</b> Bridging the culture gap between experienced staff — typically of the "baby boomer" generation — and the new staff from Gen-X and Gen-Y is important in achieving the necessary transfer of knowledge to new employees. This guideline will recognize the generational differences and offer guidance on effective knowledge transfer by way of mentoring and on-the-job training (OJT). Topics expected to be addressed include cultural differences and learning techniques; conveying equipment knowledge to less-experienced staff; establishing performance standards and work habits ("Don't do as I do, do as I say do"); examining new staff for understanding and knowledge; peer-to-peer training and mutual self-improvement; self-study guides; practical job training, examination, and documentation; and position qualification.</p>	12/31/10	Technical Update
<p><b>Risk Management Guideline Update:</b> In 2005, an initial guideline, "Using Risk Management as Input to Operational Decisions" (1008251) for operational risk management was developed to capture existing best practices within the industry. The updated guideline is intended to identify lessons learned with the application of the original guide, and also to provide new insights developed by the industry in the use of risk management tools by operation staffs. Topics to be addressed include case history applications of this or other tools to help manage risk; managing for peak demand periods and commercial availability; operations decisions based on equipment condition monitoring; collective risk considerations; and new tools being applied by operators to manage risk.</p>	12/31/10	Technical Update

Product Title & Description	Planned Completion Date	Product Type
<p><b>Operation Conference:</b> Today's operating crews and their managers face new and growing challenges. A 2-1/2-day Plant Operations Conference and Future Operations Perspectives will enhance the exchange of information between operations personnel in the electrical generation industry's fossil plants and address current and future issues. Tomorrow's operators will have new equipment, more technological support, and additional oversight from remote locations, and increased pressure to meet new environmental requirements. These and other topics are the subject of the last day of this combined conference on the issues and concerns of plant operators, shift supervisors, and operations managers, with facilitated discussions of experiences so participants can apply the knowledge in their plant operations.</p>	12/31/10	Technical Resource
<p><b>Event Case Histories and Assessment Summary:</b> Advisors have recognized that there are valuable lessons to be learned by exchanging information on both positive and negative plant events. This compilation depends on input from members who are willing to share information anonymously, so the full membership can gain from the experiences of others. The results of O&amp;M assessments also are summarized for members to understand what EPRI has identified as strengths and areas for improvement as part of O&amp;M assessment. Any industry trends noted from these assessments are also included.</p>	12/31/10	Technical Update

## Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p><b>Operations Outage Management:</b> • What best practices are being implemented to achieve better operations support of outage work? • Tag-out organization and implementation for optimum outage performance • Use of overtime and additional resources for critical work demands • Post-maintenance and post-modification acceptance testing • Online versus outage determinations • Shutdown and start-up scheduling and optimization</p>	12/31/11	Technical Update
<p><b>Operations Data Management:</b> • Build on 2005 report, "Operations Data Management: Job Functions Performed by the Shift Supervisor Not Directly Related to Oversight of Plant Operations and Status." • What data-handling tools are available and being used successfully to reduce administrative burden on shift supervisors and senior operators? • What new tools or solutions are needed?</p>	12/31/11	Technical Update
<p><b>Configuration Management:</b> • Member experiences in configuration management • Building the case for a comprehensive program • Transition from existing dispersed information to integrated, user-friendly data • Design basis and operations impact • Major modifications, taking advantage of these additions and data management • Fundamentals of an effective configuration management program</p>	12/31/12	Technical Report
<p><b>Electronic Equipment Labeling, RFID and other technologies:</b> • New technologies being used to identify components • Overview of technologies • Application to fossil plants • Member experiences in new labeling technologies • Labeling electronic links to other work processes, without issuance, clearance and tagging, and rounds data.</p>	12/31/12	Technical Update