

## **108 Operations Management & Technology**

### **Program Overview**

#### **Program Description**

This program 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. 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.

#### **Industry Needs and Issues Addressed**

- Consistent, high-quality plant operations performance
- Clearly described best practices for operations conduct
- Evaluation of new technologies to support shift operations
- Opportunities to learn from others and minimize the number of damaging plant events

#### **Impact**

- Guidelines provide tools for excellence in plant operations
- A forum for industry information exchange provides mutual benefits
- Improved plant operations through support from EPRI technical staff
- Opportunities for enhanced plant operations through understanding of new technology applications

#### **Key Accomplishments**

- *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 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 Objectives**

- 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
- DCS operational best practices
- Electronic operator rounds best practices
- Operations metrics
- Updated operations assessment guideline applications

#### **Industry Involvement**

- Estimated 2009 funding: \$1.0M

#### **Program Technical Lead**

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

## Summary of Projects

Project Number	Project Title	Value
P108.001	Plant Operations Fundamentals and New Developments	This project 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.

## Project Descriptions

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

#### Issue

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

#### Description

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 when requested by members, often including 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.

#### Value

- Improved plant operations result in lower cost and greater 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 reduces impact on plant equipment, prevents outages, and results in increased production.

#### How to Apply Results

Plant operations staff compare their existing practices with those reported in guidelines to determine areas that can 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.

2009 Products

Product Title & Description	Planned Completion Date	Product Type
<p><b>Distributed Control System (DCS) Best Practices:</b> Description of operator performance using DCS from a central control room. Topics expected to be addressed include:</p> <ul style="list-style-type: none"> <li>• Control screen displays</li> <li>• Number of monitors</li> <li>• Alarm displays</li> <li>• Access to control by other operators</li> <li>• Multiple unit operation</li> <li>• Span of control over generating unit, scrubber, baghouse, ash handling, coal handling, SCR, switchyard,</li> <li>• man-machine interface issues, control room lighting, and layout</li> <li>• Supervisory oversight and monitoring</li> </ul>	12/31/2009	Technical Report
<p><b>Electronic Rounds Best Practices:</b> Report will identify and describe the best practices by operators conducting operator rounds with electronic hand-held technology. The report is expected to include:</p> <ul style="list-style-type: none"> <li>• Hardware and software performance</li> <li>• Transition experiences, paper to electronic</li> <li>• Data reviews</li> <li>• Crew acceptance</li> <li>• Other electronic applications, routine testing, surveillance, predictive maintenance</li> </ul>	12/31/2009	Technical Report
<p><b>Conduct of Operations – Topic Selected by Advisors:</b> Advisors will select the next topic for the series of reports on highly effective operations conduct, which together comprise a set of conduct-of-operations guidelines. Topics such as log keeping, shift turnover, and communications have not been fully described in the current set.</p>	12/31/2009	Technical Report
<p><b>Case History Annual Report:</b> Events reported by members are studied for lessons learned to prevent recurrence. The events are described without reference to plant or company where the event occurred, but with sufficient information for readers to understand where their operations might be vulnerable.</p>	12/31/2009	Technical Update
<p><b>Operations Conference:</b> A conference on 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>	12/31/2009	Technical Resource

**Future Year Products**

Product Title & Description	Planned Completion Date	Product Type
<p><b>Operations Metrics</b> Compiled metrics that can be used to monitor performance of plant operations, including definitions and perspective on what is being measured, limitations of key metrics, and member-selected metrics linked to business plans and corporate goals.</p>	2010	Technical Report
<p><b>Operations Outage Management:</b> Guidelines to improve outage effectiveness through best use of plant operations staff, including:</p> <ul style="list-style-type: none"> <li>• Best practices to achieve operations support of outage work</li> <li>• Tag out organization and implementation for optimum outage performance</li> <li>• Use of overtime and additional resources for critical work demands</li> <li>• Post-maintenance and post-modification acceptance testing</li> <li>• On-line versus outage determinations</li> <li>• Shutdown and start-up scheduling and optimization.</li> </ul>	2010	Technical Report
<p><b>Conduct of Operations – Topic to be selected by advisors:</b> Advisors will select the next topic for the series of reports, which describe highly effective operations conduct and together comprise a set of conduct-of-operations guidelines. Topics such as log keeping, shift turnover, and communications have not been fully described in the current set.</p>	2010	Technical Report
<p><b>Operation Conference:</b> A 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>	2010	Technical Resource
<p><b>Event Case Histories:</b> Study of events reported by members for lessons learned to prevent recurrence. The events are described without reference to plant or company where the event occurred, but with sufficient information for readers to understand where their operations might be vulnerable.</p>	2010	Technical Update
<p><b>Mentoring and OJT:</b> A guideline to help shift supervisors and senior operators conduct effective mentoring of new hires and junior staff. Topics are expected to include:</p> <ul style="list-style-type: none"> <li>• Providing equipment knowledge to less experienced staff</li> <li>• Establishing performance standards and work habits; “Don’t do as I do, do as I say”</li> <li>• Examining new staff for understanding and knowledge</li> <li>• Peer-to-peer training, mutual self improvement</li> <li>• Self -study guides</li> <li>• Practical job training, examination, documentation</li> <li>• Position qualification</li> </ul>	2011	Technical Report

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Product Title & Description	Planned Completion Date	Product Type
<p><b>Risk Management Guideline Update:</b> Update previously developed guideline, <i>Using Risk Management as Input to Operational Decisions</i> (1008251), including:</p> <ul style="list-style-type: none"><li>• Case history applications of this product or other tools to help manage risk</li><li>• Management of peak demand periods and commercial availability</li><li>• Operations decisions based on equipment condition monitoring</li><li>• Collective risk considerations, such as multiple annunciators out of service, multiple automatic controls disabled, operator workarounds, and temporary conditions</li></ul>	2011	Technical Update

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