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## Reliability Excellence Helps a Network of Power Plants Reduce Outages and Maintenance Spending

### The Situation

The client is a group of eight dams and power plants in North Carolina and Tennessee, providing more than 2,000,000 MW of power to the Tennessee Valley Authority grid. The sites were about to invest \$400 Million in new asset technology, which demanded that best practices in maintenance and repair be employed to safeguard the capital investments in new assets.

The plants have an employee base of about 75 personnel in a good union environment. The sites were operating in a reactive environment, with no CMMS in place to document and track work planned or accomplished, and no formal processes in place for work control, materials management or reliability engineering.

### The Challenges

The initial challenge was to develop a realistic business case for the sites to move forward with LCE in a Reliability Excellence implementation project. Ultimately, maintenance spend and reduction of outages (both forced and planned), were targeted to provide the savings and cost avoidance to justify the cost of the implementation.

The next challenge that faced both client and consultant was to create an environment to allow participation by all sites in focus team activities during the planning, development and implementation phases of the initiative. Having only 75 people, stationed at eight remote locations, presented a significant logistics challenge to successful implementation of Reliability Excellence principles and processes.

### The Approach

Jointly with the client, a cross-functional focus team was created to focus in the areas of leadership engagement, work control & planning/scheduling, reliability engineering, and materials management. The focus team consisted of members from each of the eight sites. The leadership team's primary focus was management practices and plant level metrics while providing functional and moral support to the focus team. The focus team initially developed processes describing how the site currently conducted daily activities in each area. Using these current processes, the LCE team coached the focus team in current best practices in business, and mentored the team through development of target processes to improve efficiency in maintenance and materials management, and improved reliability engineering functions that reflected best practices within the operational and functional organizations in the sites. In conjunction with the creation of target processes, roles and responsibilities of individuals involved in the processes were developed, or modified where solid processes already existed.



These new target processes were implemented in one of the dam sites to provide the opportunity to prove the viability of the new processes while engaging operations personnel in asset care, autonomous maintenance activities and operating within the guidelines of the new target processes. Concurrently, necessary asset improvements were completed to raise the level of reliability in the assets, providing the foundation for improved preventive and predictive maintenance activities to sustain the assets at a higher level of reliability.

Key performance indicators were developed to provide regular data on PM compliance, schedule compliance, resource utilization, and other measures of plant performance and successes.

Following successful implementation in the pilot site, processes and practices were further implemented through each of the remaining seven sites.

Each of the eight sites implemented the company's EAM system to provide the tools to document and track maintenance labor and materials expenditures, and site personnel were trained in proper use of the system.

A proactive culture of reliability and continuous improvement is evident in all eight of the sites, and the partnership between management and union is very good. The sites are very proud of their accomplishments thus far, and are determined to continue the quest for excellence throughout the organization.

## The Results

As a result of implementing the Reliability Excellence processes and practices, resource efficiency has improved significantly, overall R&M costs have decreased, asset reliability increased, and the number of outages has been reduced.

Effective work planning, along with job material kitting, have generated significant improvement in resource utilization, allowing even more identified work to be accomplished using existing resources.

The network of power plants realized cost avoidance of approximately \$120,000 and eliminated 45 of 55 outage days, an 82% reduction.

## Conclusions

The successes realized through implementation of the Reliability Excellence processes, in conjunction with implementing an EAM system and Lean manufacturing principles, have resulted in tangible results.

The client continues to develop and improve processes and business rules to further increase the savings and avoidance of costs associated with outages and inefficiencies in the sites.



### **About LCE**

As a leading maintenance and reliability solution provider for over 30 years, Life Cycle Engineering (LCE) ([www.LCE.com](http://www.LCE.com)) helps public and private enterprise gain increased profitability through greater capacity, lower operational costs, and decreased downtime. By combining a range of industry experts, unique processes with proven success, and a comprehensive array of educational courses, LCE has gained reputable status as the premier provider of innovative and successfully executed reliability and maintenance solutions worldwide.

