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## **South Texas Project Employees Earn 'Best of Best' Award for Nuclear Industry Innovation**

### ***Focus on Improving Safety Common To Top Industry Practice Award Winners***



*CHICAGO, May 7, 2008*—Employees of the South Texas Project Nuclear Operating Co. have been honored with the nuclear energy industry's B. Ralph Sylvia *Best of the Best Award* for their success in improving safety and lowering operational costs through their development and application of risk-management to the power plant's technical specifications program.

The winning program is the result of a successful seven-year effort to develop tools and methods that effectively manage timeframes for preventive and corrective maintenance of power plant systems and components covered by plant technical specifications. Two reactors at South Texas Project, located near Bay City, Texas, produced 23.2 million megawatt-hours of electricity in 2007, which led all two-unit nuclear power plants in the nation

Nearly a decade ago, industry and the Nuclear Regulatory Commission embarked on a joint effort to develop initiatives that would provide risk-management options for managing maintenance and related aspects of nuclear plant operations. The South Texas Project spearheaded the project and established a multi-disciplinary team that involved personnel from operations, engineering, risk management, licensing, generation support, work control, training and other departments.

The team worked closely with the NRC, the Nuclear Energy Institute and other companies in the nuclear energy industry to create a process that would allow any company to implement risk-management techniques to plant technical specifications. They also created software to implement the program and provided extensive input to the NRC on user guidelines.

The program's benefits are profound. The South Teas Project team identified significant improvements in safety, equipment reliability, maintenance, operations and production,

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as well as cost savings of \$2 million per year – potentially \$80 million over a power plant’s 40-year license term.

“The South Texas Project team took the lead in developing this cutting-edge program that can improve efficiency and safety across the entire nuclear industry,” said Tony Pietrangelo, NEI vice president of regulatory affairs. “Their extraordinary effort and commitment to excellence rightly deserves this recognition.”

The Best of the Best Top Industry Practice (TIP) award was presented at NEI’s annual meeting here. The TIP awards recognize industry employees in 14 categories - four vendor awards and nine process awards for innovation to improve safety, efficiency and nuclear plant performance, and one award for vision and leadership. The Best of the Best Award honors the late B. Ralph Sylvia, an industry leader who was instrumental in starting the TIP awards in 1993. NEI this year received nearly 100 entries for awards.

Other companies with employees who received awards are: **AmerGen Energy, Dominion Nuclear Connecticut, Entergy, Exelon Generation Co., Exelon Nuclear, FirstEnergy, Global Nuclear Fuel-Americas, Omaha Public Power District, Tennessee Valley Authority and Westinghouse Electric.**

### **VENDOR AWARDS**

**AREVA, GE Hitachi Nuclear Energy, Westinghouse Design and Westinghouse Combustion Engineering Design** presented TIP Vendor awards recognizing top practices and improvements at plants that are associated with these nuclear design-engineers.

**Dominion Nuclear Connecticut** employees at the Millstone power station received the *AREVA Vendor Award* for developing a method to examine control rod drive mechanism nozzles without removing and replacing their thermal sleeves. By combining two techniques—a circumferential blade probe to collect ultrasonic data and an electromagnetic scanning probe—the team was able to accurately examine the nozzles and meet all examination requirements without removing the thermal sleeves. This process eliminated 15 days of plant maintenance, saved \$6.8 million in labor and materials, and significantly lowered worker radiation exposure, which remained within federal limits. Other plant operators can use this innovation for similar examinations.

**Entergy and Global Nuclear Fuel-Americas** employees earned the *GE Hitachi Nuclear Energy Vendor Award* for their strategic collaboration to enhance fuel reliability in the company’s boiling water reactors. The two companies established an integrated

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data exchange to develop best practices related to reactor fuel assembly management. This includes GNF-Americas providing Entergy access to its engineering programs, and Entergy's sharing of real-time reactor core monitoring and chemistry data. Through this unique collaboration, the companies are developing new fuel reliability guidelines and ensuring that the latest approaches to fuel management are implemented quickly.

The approach is already producing results. Through recent fuel inspections at a power plant in New England, the partners provided the entire industry a new perspective on the effects of zinc within the reactor core.

**Exelon Nuclear** corporate support and Byron power station employees were recognized with the *Westinghouse Design Vendor Award* for their control rod drive mechanism (CRDM) sample specimen of an in-service reactor head. During an examination of CRDM nozzles on the reactor pressure vessel head, the Exelon team found indications of possible cracking on one nozzle. The company extracted a hull-shaped "boat" sample (the first materials scoop from an in-service reactor vessel head) and performed a metallurgical analysis. Testing showed that a weld defect had caused the initial indication and there was no evidence of corrosion cracking in the nozzle. By conducting its own thorough analysis through the sample, the Exelon team helped other plants with similar reactor vessel head materials avoid additional worker radiation exposure and costs associated with more frequent nozzle inspections.

**Dominion Nuclear Connecticut** employees at the Millstone power station were honored with the *Westinghouse Combustion Engineering Design Vendor Award* for protecting steam generators at a reduced cost through innovations in condensate polishing. The results have been dramatic. Corrosion has been reduced by 80 percent and the number of steam generator inspections has been reduced significantly, lowering worker radiation exposure. Also, chemical use has been reduced by 50 percent and some resin charge changes have gone from a 10-day rotation to nearly two years. The plant has reduced water use by 16 million gallons a year and nitrogen use by 20,000 kilograms annually. The plant is saving \$500,000 annually in chemical purchases, \$50,000 in equipment use, and 3,000 worker-hours. It also will save \$1 million in reduced maintenance during each maintenance shutdown. This innovation can be undertaken by many plants without major capital investment.

### **TIP PROCESS AWARDS**

**South Texas Project Nuclear Operating Co.** team members earned the *Operate Plant Process Award* for their success in improving safety and cost-saving efficiencies

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through their development and application of risk-management to plant technical specifications that was honored with the Best of the Best Award.

**Exelon Nuclear** employees at the Quad Cities power plant received the *Configuration Management Process Award* for solving vibrations in the main steam line that would have impaired their ability to increase power output through an “uprate.” By comparing their two reactors, the team discovered that standpipes on the affected plant’s steam lines had a smaller internal diameter than the unaffected plant. The team created the most extensive boiling water reactor instrumented steam-path startup test ever performed. Using test data, the team commissioned a scale-model test rig to model the system and develop a solution. Through use of the scale-model, the team developed a method that eliminated the vibrations and allowed the company to pursue a 240-megawatt uprate that greatly increased the reactor’s electricity generation and efficiency.

**Omaha Power Public District** employees at the Fort Calhoun power station earned the *Work Management Process Award* for managing major nuclear refurbishments. Having received a license extension from the NRC in 2003, the OPPD team in 85 days refueled the reactor and replaced the steam generators, reactor vessel pressure head, pressurizer, main transformer, low-pressure turbines, main steam piping and hydrogen coolers. They accomplished all of this, plus typical refueling maintenance, tests and inspections, five days ahead of schedule and \$35 million under budget with no lost-time accidents. The process included the creation (and resealing) of a 24-foot octagonal opening in the four-foot-thick steel and concrete containment structure that houses the reactor. The success of this undertaking—the industry’s most extensive plant renovation to date—required excellent planning and work management, and outstanding teamwork.

**Exelon Nuclear** corporate employees were recognized with the *Equipment Reliability Process Award* for developing a system to effectively monitor plant system performance and equipment parameters at all of the company’s reactors. Based on a NASA-developed cluster algorithm to monitor space missions, the team modified the software to track hundreds of plant processes and identify changes in real time. The software alerts operators to anomalies so plant personnel can investigate situations to reduce the possibility of equipment failure. This improves safety and equipment reliability at all of the company’s plants. In just two months, the system saved the company an estimated \$550,000 through avoided repairs.

**FirstEnergy** team members of the BETA Laboratory were honored with the *Materials and Services Process Award* for their state-of-the-art electronic circuit board testing laboratory. The laboratory enables the company to test new, spare, suspect or obsolete circuit boards. Having this centralized in-house resource increases safety, efficiency and cost savings for the company’s four reactors. The company recently saved \$240,000

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when lab experts repaired 10 modules at a cost of \$1,000 per module, versus the \$25,000-per-module charge of an outside vendor. The company increased safety by avoiding potential failures when the laboratory tested 64 new circuit boards and found faults in 28 pieces.

**Exelon Nuclear** employees at the Dresden power plant are recipients of the *Support Services Process Award* for developing movable 86-ton radiation shield walls. Put in place by a crane, each 27 feet high, 13 feet wide wall features three adjustable work platforms. Designed to limit radiation exposure for a work team installing a new condensate filter system with the plant on-line, the freestanding walls eliminated the need to install 30-foot high scaffolding. The savings from avoiding the scaffold and rigging work alone paid for building the walls. The walls also reduced worker radiation exposure by an estimated 90 percent and helped achieve a zero personal injury and lost time rate for the project. The walls worked so well that they are being used for other purposes at Dresden and are expected to be used at other Exelon plants.

**Exelon Nuclear** employees at the Three Mile Island power plant received the *Loss Prevention Process Award* for their raw water line code repair. A leak on a 30-inch raw water header pipe caused by microbiologically induced corrosion could have required a plant shutdown if it were not repaired. Deciding to repair the leak within American Society of Mechanical Engineers Code, the team devised a special device that would allow the repair to be made with the system in-service at 40 pounds per square inch pressure. A water-diversion device redirected leaking water during welding; then the team was able to remove the microbe colony with an encased hole saw and seal off the leakage pathway. Had the leak worsened and forced a plant shutdown, the company would have lost an estimated \$4 million.

[Two Nuclear Fuel Process Awards were awarded this year.]

**Tennessee Valley Authority** employees at the Watts Bar nuclear plant earned one *Nuclear Fuel Process Award* for their zinc application and core crud removal initiative. Seeking to reduce problems created by excess core crud in their high boiling duty pressurized water reactor, the Watts Bar team capped a year of analysis by inserting zinc into the primary system. The innovation improved core performance and lowered plant radiation source terms by one-half. This alone reduced worker radiation below expected levels and accounted for \$500,000 in savings. In total, the effort will save the company about \$2.5 million in the first three years of the program.

**Exelon Generation Co. and Westinghouse Electric Co.** employees also were recognized with a *Nuclear Fuel Process Award* for their zinc addition with high boiling duty pressurized water reactors at the Byron and Braidwood stations. Faced with an alloy

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that was susceptible to stress corrosion cracking from water that circulates through the reactor, the team sought to mitigate the situation. Employing a decision analysis technique called Decision Advisor to provide extensive analysis, the team determined that the addition of zinc would provide significant benefits. Since the addition of zinc was initiated, the potential for stress corrosion cracking has significantly declined. Another important result is that radiation dose rates associated with the primary system have dropped by 56 percent and related worker exposure by 43 percent. The decision to inject zinc into the system showed a net value of \$4.4 million per each pressurized water reactor.

**Dominion Nuclear Connecticut** team members at Millstone were honored with the *Training Process Award* for their See-Thru, Hands-On, Human Performance Training Model of a pressurized water reactor. To drive their station's efforts to teach all employees about the plant's safety and operation, the team created a fully functioning training model that focuses on human performance factors. With transparent piping, vessels, shrouds and housings, the model allows employees to watch the plant react as they work together to operate it. Teams of four go through training and work together to follow procedures to start up, raise power, attain full power, and shut down the power plant. They learn about plant safety, work performance issues, operations, procedures, communications, and power plant fundamentals. More than 750 Millstone employees have completed the training. Since implementing the training at Millstone, the recordable injuries rate dropped by 50 percent, the forced outage rate dropped by 88 percent and the human performance error rate dropped by more than 50 percent.

**Exelon Nuclear** employees at the Limerick power station are recipients a special *Vision & Leadership Award* for their Mine Water Augmentation and River Restoration Fund Project. Demonstrating environmental stewardship and their commitment to be a good neighbor, the program has enabled the company to secure its water needs for the plant and improve regional water management. By using ground water held in mining sites, the company developed a cost-efficient means to offset its consumptive water needs while helping to protect local community water supplies. The River Restoration and Monitoring Fund created by the team helps to clean up acid mine drainage from abandoned coal mines and provides funding for local and statewide water management and water quality improvement programs in Pennsylvania.

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*The Nuclear Energy Institute is the nuclear energy industry's policy organization. This news release and additional information about nuclear energy are available at [www.nei.org](http://www.nei.org).*