

## TIP AWARDS

# New reactor inspection method at Surry takes top TIP trophy

**T**he Nuclear Energy Institute's Top Industry Practice (TIP) Awards for 2014 were announced on May 21 at NEI's annual conference, the Nuclear Energy Assembly. The top prize, the B. Ralph Sylvania Best of the Best Award, went to a team of employees from Dominion Generation's two-unit Surry nuclear power plant in Virginia for their "First-of-a-Kind Inspections of Reactor Internals," an automated process for inspecting and analyzing components inside the reactor. The process and the specialized tooling developed by the Dominion team enabled accurate examinations of reactor components and materials in hard-to-reach locations. While examinations of welds in reactor vessel walls can be difficult, the team overcame plant configuration and access challenges—aided by AREVA's lower girth weld inspection tool (see Equipment & Services, page 83)—to safely complete the project.

The Surry team also developed remote-controlled hydro-lasers for cleaning, as well as maneuverable inspection cameras that could fit and function in small gaps. The safe execution of the examination process was a result of the team's extensive planning of tool development, use of mock-ups for personnel training and tooling optimization, execution of detailed pre-job briefings, and supervisory oversight. Cost savings for the project exceeded \$1 million, and similar savings are expected at Dominion's three other nuclear power plants.

"The Nuclear Energy Institute is pleased to acknowledge the many dedicated industry professionals with Dominion whose hard work and commitment to safety led to these excellent results," said Anthony Pietrangelo, NEI's senior vice president and chief nuclear officer. "This accomplishment and scores of other innovations and improvements constantly being developed across the U.S. nuclear energy indus-

*Dominion Generation employees head this year's list of Top Industry Practice Award recipients, winning both Best of the Best and Equipment Reliability honors.*



Photo: NEI  
Accepting the B. Ralph Sylvania Best of the Best Award are, from left, Kim Clark, chief commercial officer, North America, AREVA; David Germano, civil engineer, Dominion Generation; David Christian, executive vice president and chief executive officer, Dominion Generation; Janean Sealey, project manager, Dominion Generation; Dave Heacock, president and chief nuclear officer, Dominion Nuclear; Chris Plucker, engineering supervisor, AREVA; and Stanley Duvall, NDE task lead, AREVA.

try have helped it achieve a level of nuclear safety that is second to none in the world."

In addition to the Best of the Best award, the annual TIP awards recognize achievements in 13 categories—four reactor vendor awards and nine process awards for innovations that improve safety, efficiency, and nuclear plant performance—as well as an award for vision, leadership, and ingenuity.

### Vendor Awards

American Electric Power employees at the Cook nuclear power plant in Michigan were recognized with the AREVA Vendor Award for pioneering a new approach to reactor vessel maintenance. In cooperation with AREVA, the Cook team developed an automated tooling method to safely replace 28 bolts on six support devices inside the reac-

tor vessel. The method included a submerged tooling frame and two moveable, remote-controlled tooling modules that allowed simultaneous work on two supports. The new method, which ensures the continued safe operation of the supports, expedited the repair process, saved more than \$10 million in outage costs, and increased worker safety.

■ Employees of Southern Nuclear Operating Company at the Hatch plant in Georgia earned the GE Hitachi Nuclear Energy Vendor Award for adapting GE Hitachi's Stinger remote-controlled vehicle to perform first-of-a-kind inspections inside reactor vessels. Stinger swims to the inspection location, attaches to the surface, and extends a maneuverable inspection camera and cleaning wand to components up to 30 feet away. The Stinger inspection improves the visual quality of examinations, increases worker safety while reducing inspection time and costs, and is transferable to similar boiling water reactors.

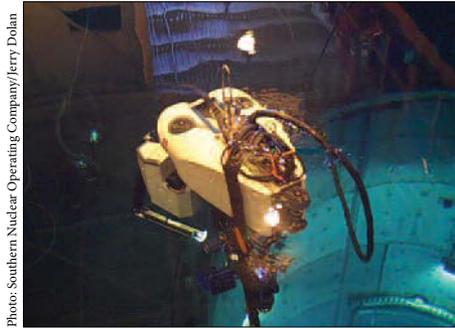


Photo: Southern Nuclear Operating Company/Jerry Dolan

Stinger, a remote-operated visual inspection system for boiling water reactors, prepares to dive.

■ A NextEra Energy team at the Point Beach plant in Wisconsin received the Westinghouse Design Vendor Award for pioneering an inspection process that uses three leading-edge technologies to complete extensive reactor vessel internal examinations safely, under budget, and ahead of schedule. Using ultrasonic devices, high-tech cameras, and enhanced visual techniques, along with specially designed tools, the NextEra team was the first ever to complete all inspections stipulated for pressurized water reactors in a single outage. The tooling and inspection processes used by NextEra are directly applicable to other nuclear power plants.

■ Employees of Arizona Public Service Company (the only utility to win three TIP Awards) at the Palo Verde plant earned the Westinghouse-Combustion Engineering Design Vendor Award for a process that enabled them to ultrasonically inspect 61 hard-to-access instrument nozzles on the bottom of the reactor vessel. Because the process was developed, tested, and approved well in advance of the scheduled inspections (during a refueling outage), it facilitated the timely repair of one of the nozzles, saving at least 90 days of outage time and nearly \$30 million.

## Process Awards

■ Pacific Gas and Electric Company employees at the Diablo Canyon plant in California were the winners of this year's Community Relations Award for devising a public education program that communicates to customers, regulators, and other stakeholders the plant's value beyond the production of electricity. The multidisciplinary effort centered on three themes: safety, economic benefits, and environmental benefits. The comprehensive program gained strong media coverage and broadened support from the public, community leaders, and elected officials for the continued operation of the plant.

■ Exelon Nuclear team members received the Operate Plant Award for innovation in the storage of low-level radioactive waste associated with reactor operation. The fully contained process efficiently compacts and disposes of the waste while reducing time and costs, preserving used fuel storage capacity, and increasing worker safety.

■ Dominion Generation employees at Surry, winners of the B. Ralph Sylvia Best of the Best Award, were also presented with the Equipment Reliability Award for their first-of-its-kind process for inspecting reactor internals (see previous page for description).

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Photo: NextEra Energy

A fiberscope inspection tool was used at Point Beach to inspect the lower core barrel girth weld.

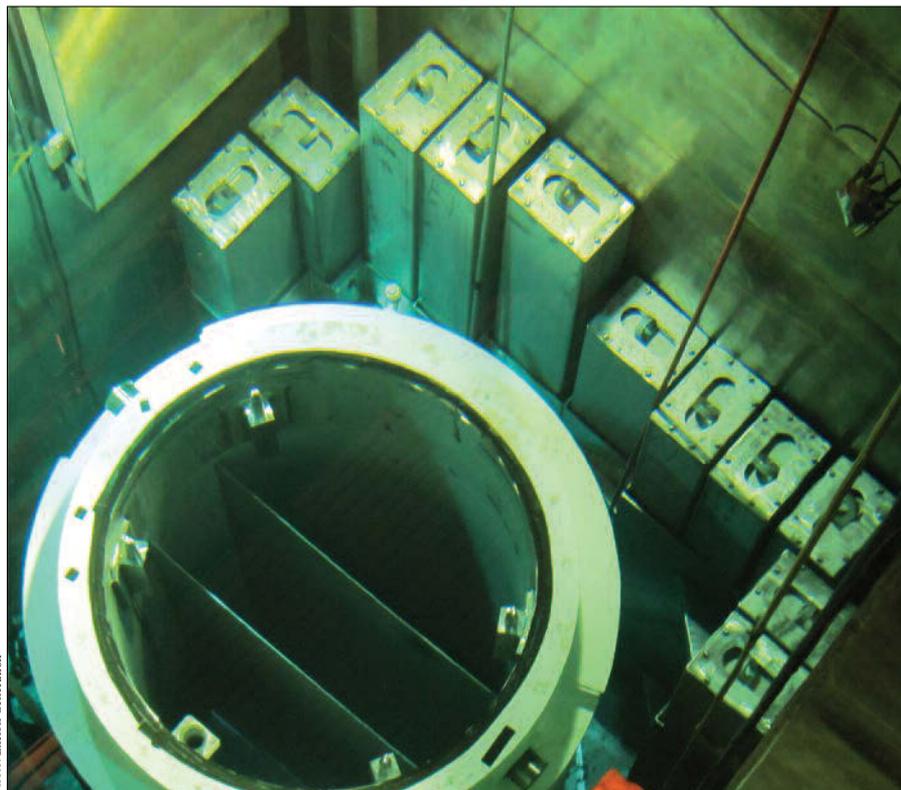


Photo: Exelon Generation

Compacted materials are ready for loading into the nonfuel waste container at Exelon's LaSalle station.

■ Arizona Public Service employees at Palo Verde garnered the Maintenance Award for their “Palo Verde Unit 3 Emergent Bottom Mounted Instrument Nozzle Repair.” The APS team developed first-of-a-kind technologies, techniques, and tooling to safely complete this complex repair in only 32 days from when the issue was discovered, far less time than the 72 days required for a comparable industry repair in 2003.

■ Arizona Public Service employees at Palo Verde won the Materials, Management Processes, and Support Services Award for leveraging technology to efficiently support difficult reactor vessel repairs. The employees utilized state-of-the-art organizational methods and information-sharing technologies that significantly increased productivity, saved weeks of time, and reduced costs.

■ An Exelon Nuclear employee at the Braidwood plant in Illinois helped the utility capture the Plant Support Award for its Jack Trap, an electrical safety device that prevents worker injury and the accidental starting or stopping of equipment during routine electrical contact or “jack” checks. Placed over the contact to be tested, the Jack Trap covers the other contacts to prevent an inadvertent electrical short. This simple-to-use, low-cost, and time-saving device can



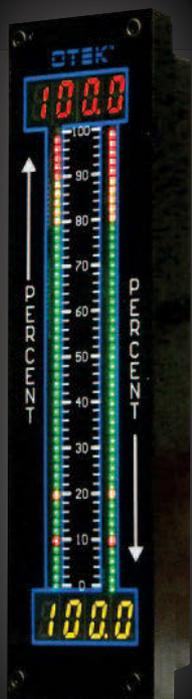
Photo: Exelon Nuclear

The Jack Trap, installed at Braidwood, is constructed out of electrically insulated nylon and tested to 5 kV. Hinged construction adds to the portability and ease of installation.

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Photo: Duke Energy/William Murphy

Workers at the Duke Energy–operated Catawba plant prepare the Transportable Storage Canister for transfer into the Vertical Concrete Cask. This ultra-high capacity dry cask storage system lowers employee radiological exposure, stores more used fuel, reduces the number of containers needed, and saves the company millions of dollars.

be used industry-wide, with estimated savings at each facility of \$70,000 a year.

■ Xcel Energy employees at the Monticello plant in Minnesota were recognized with the Training Award for their improvement of the training simulator with technologically advanced simulation modeling. Simulations include three-dimensional photorealistic graphics to help operators understand the physical status of the reactor vessel. The simulations have been benchmarked by numerous members of the international training community and have been used to demonstrate the unique aspects of nuclear energy to members of the local community.

■ Duke Energy employees at the Catawba plant in South Carolina were honored with the Nuclear Fuel Award for their implementation of the industry's first high-capacity dry storage system. The new

MAGNASTOR dry storage system maximizes used nuclear fuel storage while saving time and increasing worker safety. Duke Energy expects to save \$3.3 million by 2020 through this program.

### Vision, Leadership & Ingenuity

Duke Energy employees at the McGuire plant in North Carolina and the Catawba plant took home the Vision, Leadership & Ingenuity Award for their “Emergency Core Cooling Water Management Initiative.” The Duke team increased the safety of the plants’ four reactors by increasing reactor cooling water inventory and reducing operator actions during potential emergency scenarios, along with other significant safety improvements. All or parts of the safety innovations are directly transferable to most of the nation’s commercial nuclear reactors. **NN**