



EDUCATION & TRAINING

A community (college) effort

WHEN *NUCLEAR NEWS* published an article last November on nuclear education and training, readers commented that they were happy to see a spotlight focused on the subject. Yet, we knew the whole story had not been told. In that regard, the following article provides additional information about programs that are educating students in nuclear technology and bringing qualified workers to the industry. This time around, we focus on the two-year programs becoming available at community colleges across the country.

Lakeland's story

In the summer of 2002, staff members at the Perry nuclear power plant in Ohio contacted the neighboring Lakeland Community College with an interesting request. Is it possible, the Perry staffers queried, for Lakeland to start up an associate's degree program in nuclear engineering technology?

The request sparked immediate action at the school, and a nuclear program was launched in the fall of 2002. Less than two years later, in May 2004, Lakeland's program had graduated its first class, consisting of seven students. This month—May 2006—the third graduating class will leave Lakeland and be ready to enter the workforce at a nuclear plant. Looking ahead, the school expects to graduate seven to 10 students per year.

Lakeland's program is intended to prepare students for immediate careers as mechanical and electrical maintenance workers, chemical laboratory technicians, and radiation protection specialists. Classes in the program include nuclear industry fundamental concepts, reactor plant materials, radiation detection and protection, and case studies in nuclear engineering. The name of the degree awarded to graduating students is associate of applied science in nuclear engineering technology.

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Two-year programs in nuclear technology are becoming increasingly available at community colleges across the country.



Students Jim King (from left), Tim Usko, and Jennifer Sullivan work on an experiment in the Process Controls class as part of the curriculum in the nuclear engineering technology program at Lakeland Community College. (Photo: Lakeland Community College)

Marty Shingler, assistant professor and coordinator of the nuclear engineering technology program, explained that the program developed quickly because the community college already had an infrastructure set up.



Shingler

It already had offered a number of electrical courses, including circuits, process controls, and motors, and so those could be used in the nuclear program. An existing heat transfer course was also made part of the program, but it was replaced after a year by the initiation of a thermal fluids course.

Shingler is the program's only full-time instructor, but he is joined by employees of the Perry plant who teach courses at Lakeland on a part-time basis. The Perry plant is operated by FirstEnergy Nuclear Operating Company. Both the plant and the school are located in Lake County, in northeastern Ohio.

Shingler stressed that the program is traditional in that students must physically come to class; distance learning is not an option. At the end of the two-year program, the students graduate with associate's degrees and can walk right into full-time employment at a FirstEnergy nuclear plant. "We've had 100 percent placement," Shingler said. "In fact, Lakeland has another program with FirstEnergy that is non-nuclear—Applied Electric Utility Technology, for line workers and substation workers—and we've had 100 percent placement from that program, too."

Lakeland's nuclear program offers what Shingler calls a "summer field experience" in which students work at the Perry plant for 10 to 12 weeks and are paid \$14 to \$15 an hour. The students rotate through different plant departments every two weeks. When the summer experience ends, Perry's management typically offers the students part-time employment at about the same wages. But even with this "pre-employment," Shingler said, Lakeland is not providing as many potential employees as FirstEnergy would like. "We can't give them enough people fast enough," he said. "Now there is talk of possibly trying to take people who are near graduation and letting them apply for openings."

So far, all graduates of the program have landed at a FirstEnergy nuclear plant, either at Perry, or at Davis-Besse, in Oak Harbor, Ohio, or the two-unit Beaver Valley, in Shippingport, Pa. The recent graduates have landed jobs in the areas of radiation protection, maintenance services, mechanical maintenance, and electrical maintenance, and as nonlicensed reactor operators.

Because there is such a clamor for graduates, Shingler said, he would like to increase promotion of the program. So far,

students have usually come from two distinct groups. "We have the traditional student right out of high school, 18- to 19-years-old without a lot of experience," he said. "And then we get a lot of people who are trying to 're-tool' themselves, going through career changes." Once in a while, though, a new student will have learned about the program while working an outage at the Perry plant.

Lakeland is an open enrollment college, which means any student who applies is accepted into the school. But that doesn't mean that every student is material for the nuclear engineering technology program. "We tell people ahead of time that it is a two-year degree, and that there are math, chemistry, physics, English, and those types of courses," he said. "We also tell them about the background checks and drug checks that are required for working in the nuclear industry."

Shingler said that Lakeland is currently completing the paperwork to apply to get the program accredited by ABET. The American Nuclear Society is ABET's accrediting body for nuclear engineering and nuclear engineering technology programs.

The goal for the program, for now, is to increase each graduating class to at least 10 students. "We feel it is just a marketing issue of getting out and hitting the streets," he said. There is still some resistance to the program, though, due to the negative image of nuclear power that still exists. Some students joke to Shingler that they don't want to take a program that would make them "glow." Shingler said he likes to counter such talk by noting the reality of job security, telling students that working at a nuclear plant is "not a job that can be outsourced to another country."

More information about Lakeland's program is available online at <www.lakelandcc.edu/ACADEMIC/ENGINEER/nuclear/>.

Linn State's saga

The nuclear technology program at Linn State Technical College is new, like Lakeland's, and offers an associate of applied science degree in nuclear technology. Its focus is on supplying radiation protection technicians to the nuclear industry. Like Lakeland's, Linn State's program is traditional, rather than the distance-learning variety, "because there is so much hands-on and actual practice" in the classroom and laboratory, according to Bruce Meffert, nuclear technology instructor at the two-year college in Mexico, Mo.

Linn State's program was developed about two years ago with the help of the University of Missouri's Nuclear Science and Engineering Institute and its research reactor, in partnership with AmerenUE's Callaway nuclear power plant. A grant from the Department of Energy helped fund the program. None of it would have happened,

however, without the participation of Chris Graham, a health physicist at Callaway. Graham saw the industry's need for radiation protection technicians and worked to get Linn State and the University of Missouri together to set up the program. He was also instrumental in obtaining the DOE grant.

Courses in the program include radiation sciences, introduction to radiation safety, piping and instrumentation, radiation detection, radiation dosimetry, radiation protection, and reactor theory and operation. A required eight-week internship at a nuclear plant is included as part of the curriculum in the second year of the program. Most students fulfill this requirement by working as junior health physicists during refueling outages.

Currently, Linn State has seven second-year students who will be graduating this year. Twelve more first-year students are on target to get their degrees next year. The goal is to have at least 20 students—with up to as many as 40—enrolled in the program at any one time. "If we only have one instructor—who would be myself—the program could handle 20 students graduating per year," Meffert said, "but since there is



Meffert

such a need out there, we as a college need to be pumping out more of these people." For emphasis, Meffert added that his phone has been ringing off the hook with calls from nuclear plants seeking radiation protection technicians.

Linn State is located in north central Missouri, about 35 miles north of the Callaway plant. The college is also at the hub of a nuclear bonanza. "Basically, I tell my students that in a 6- to 8-hour drive from here, they can reach 25 nuclear power plants," he said. "We emphasize power because that's where a lot of the money is and where most of my students want to go." But, Meffert said, the program is also ready to send graduates to the medical, environmental, and laboratory sectors.

One way that Linn State advertises its program is by sending brochures to every nuclear plant in the United States. That effort has worked. "The thought process is that the sons and daughters of nuclear workers will want to follow in their parents' footsteps," he said. "They'll come to Missouri for school for a couple of years, and then they'll go back to their home plants and be hired there."

Like Lakeland's students, the age range for Linn State's program is a mix. Some are straight out of high school, and others are already experienced in the work world. One student in the program is 46.

More information about Linn State's program is available online at <www.linnstate.edu/academic/mnt/catalog.asp>.



Linn State Technical College nuclear technology students Rebecca Case (left) and Jennifer Swader assess the radiological conditions prior to work on a simulated radioactive piping system. The rest of the class evaluates their performance. (Photo: John Oidtman, Linn State Technical College)

Blossoming programs

More programs like Linn State's will be springing up across the country. Gary Nevels, recently retired as a radiation protection supervisor at the Callaway plant, works as a curriculum developer for these fledgling programs under contract with Linn State and the University of Missouri.

Nevels said his work involves "cloning" the Linn State program in order to develop radiation protection programs at four community colleges in the United States that have partnered with nuclear utilities or vendors for this effort. The Department of Labor is providing a \$2.3-million grant to fund the development.

The participants are Central Virginia Community College, in Lynchburg, Va., which is partnered with Areva/Framatome; Estrella Mountain Community College, in Avondale, Ariz., partnered with Arizona Public Service Company; MiraCosta Community College, in Oceanside, Calif., partnered with Southern California Edison Company; and Hill College, in Hillsboro, Tex., partnered with TXU Electric. In addition, Nevels said, Bartlett Nuclear, Inc. has partnered with all of the colleges because it is the largest supplier of radiation protection technicians to the nuclear industry.

The companies are helping finance the development efforts at the schools and will offer internships to students once the programs are up and running, with the hope that, in return, the students will come to work for them after graduation.

The University of Missouri will act as the "grantee" for the Department of Labor funds. Nevels, who is working to develop the course materials that will be used in the radiation protection programs, said that federal funds will be used to help set up and equip labs at the colleges. He added that some of the programs might be up and running by the end of the year.

Each college will be responsible for marketing its own program and attracting students. Nevels said he is confident the effort will be worth it. "Hopefully, we can boost the number of radiation protection technicians in the industry," he said.—*Rick Michal*

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