



People inside cannot order lunch from the deli just outside the gate because the state troopers and guardsmen won't let the deliveryman in. Tony Venditti, one of the operators in Alpha crew, said that when the starter on his old Corolla gave out recently in the parking lot, it took two hours for the tow-truck driver from a neighborhood gas station to clear security. The security department had to issue the driver a picture ID before he could get in. All the trees on a slope overlooking the reactors have been cut down to improve the defenders' lines of sight, and the Coast Guard patrols the Hudson River side.

But the new owners are focusing heavily on a more traditional problem: the plant's performance. Entergy brought in instructors from Indian Point 3 — which it bought in November 2000 from the New York Power Authority — and from elsewhere to teach the sessions.

They saw signs of progress by today, the end of the second week. At one point an accident drill was stopped, and after a discussion of the progress made, an instructor asked if the operator was satisfied.

"I'm happy," said the trainee.

The instructor, Ronald Stotts, responded with a hint of a smile, "I understand that you're happy."

The trainee shot back, "That's correct."

Some exchanges are even more odd. In the drills, when the supervisor wants to address the whole group, he raises his right hand and says, "Brief!" All turn to face him and raise their hands, until they look like a classroom of third graders, eager to be called on.

When the supervisor makes eye contact with each person, he lowers his hand and begins speaking. The technique assures that everyone, quite literally, is on the same page; they work from a loose-leaf binder five inches thick that gives procedures for every sequence of malfunctions that engineers can think of.

The binder contains a "fault tree," a predefined structure for decisions and actions. The beginning, a chapter called E-0, designating the starting point of an emergency, orders actions that do not rely on knowing exactly what happened. The operators, however, must quickly jump to more specific procedures.

The trainers quiz the operators on the titles of each chapter and subchapter, and tell them to list the sections in which they would find instructions that concern a specific pump or valve, and to list all the conditions in the reactor that might call for certain procedures. The operators keep an index in their heads, a concordance to the operating bible.

The training puts a heavy emphasis on analytical skills, with each member of Crew Alpha quizzed on why each item in a procedure is there.

Indian Point 2 has about 55 operators. In the early days of nuclear power, the machines were billed by some proponents as idiot-proof; in fact, at Three Mile Island, which experienced a meltdown in March 1979, the plant might have done better had the operators done less. But in the last few years, operators have been recognized as a crucial component to safe operation.

Each operator represents a substantial investment by the plant owner. Initial training takes 13 months, and operators get six weeks a year of refresher training; executives point out to operators that most airline captains receive only one week a year. Training each reactor operator costs about \$250 an hour, Entergy estimates.

Reactor operators are generally paid \$110,000 to \$120,000 a year, including overtime. Senior reactor operators, who are considered management, receive \$125,000 or more, including a \$14,000 bonus for maintaining their licenses.

But Entergy plans to spend more, to raise the number of operators to about 70, because company executives believe that having a few extra would improve operations and make shutdowns rarer and shorter. The plant's output sells for about \$1 million a day.

"Salaries are cheap if you can keep the place running," said Paul W. Rubin, who became operations manager at Indian Point 2 after Entergy bought it from Con Edison last Sept. 6.

Passing the license test is like getting permission to fly a one-of-a-kind airplane. Indian Point 2 and 3 look like twins separated at birth, but they are different enough that licenses are not transferable. An operator at one would, at the moment, have to take 13 months to learn to run the other. Now that what managers jokingly call the "Berlin Wall" between them has come down, with common ownership, Entergy is considering training any new hires for a dual license, but managers are not sure this would be cost-effective.

At the moment, though, management's focus is on trying to inculcate a mixture of caution and confidence in the operators. The reactor will have to operate more hours of the year, top executives of Entergy say, with fewer breakdowns and fewer errors. But the operators also must not hesitate to shut the plant down if they are not sure about its safety. "You don't cut corners to make the schedule," Fred Dacimo, the vice president of Entergy in charge of Indian Point, said in a tough pep talk to the Alpha crew. "You make the schedule by flawless execution."

Quoting from an industry group, he said that when a control room operator puts his hand on the lever to pull out the control rods and start the chain reaction, "he has more potential power in his hands than the NASA engineer who ignites the booster rockets in a space shuttle for launch."

But he added: "For the guy who pushes the button that launches the space shuttle, there's light, there's sound, the whole place goes vroom. We tend not to see that, but it's there. Our job as nuclear professionals is never to lose sight of that."

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