

THE NUCLEAR NEWS INTERVIEW

Lori Glander: Environmental monitoring at Indian Point nuclear power plant

Lori Glander is a radiation protection supervisor at the Indian Point nuclear power plant, in Buchanan, N.Y. Because the plant is within 30 miles of New York City, some groups and legislators who want it closed down for “security” reasons have targeted it. In response, Entergy Nuclear Northeast, the plant’s operator, has spent a good amount of time and dollars on convincing the public that the plant is safe and secure, and that its emergency plan is effective.

Part of the plant’s emergency plan includes atmospheric monitoring in an area surrounding Indian Point, and in that regard a project currently under way involves upgrading the capacity of an offsite monitoring system. The upgrade—and, in fact, the monitoring system itself—is not mandated by industry regulations, but is being done to

A series of 16 radiation detectors surrounds Indian Point, on the lookout for possible higher-than-normal radiation levels.

enhance the plant’s ability to measure offsite radiation levels at a moment’s notice.



Glander: “It was time to get up to speed with current technology.”

What is new in radiation monitoring at Indian Point?

There is a project under way that is closely linked to emergency planning. The project includes the upgrading of 16 radiation detectors that are located off site, one mile away, surrounding the plant at 22.5-degree intervals. These detectors are commonly known in the industry as Reuter-Stokes. They are pressurized ion chambers that are positioned on top of tall poles and are used to track plumes in the event of a radiation release from Indian Point. We already have new control panels installed and

we’re now replacing the old analog detectors with new digital Reuter-Stokes units.

Why are you upgrading the system?

In February 2000, at a time when the plant was owned by ConEd, we had a tube event that resulted in an emergency plan alert. Indian Point has two operating four-loop PWRs, and each reactor has four steam generators that serve as heat exchangers. The contaminated reactor coolant system is on the primary side of the reactor, and the turbine-bound heated steam goes through the secondary side. The primary side and

Indian Point has two operating Westinghouse pressurized water reactors. Unit 2 is rated at 957 MWe (net) and Unit 3 at 980 MWe (net). A third reactor at the site was shut down in 1974.

Glander has been at Indian Point for almost five years, and has been a supervisor in the Radiation Protection group for about three years. Before joining Indian Point, she worked at a research reactor facility that made radioisotopes for medical use.

Glander talked with Rick Michal, *NN* senior associate editor, about environmental monitoring at Indian Point.

secondary side meet in the steam generators, where the heat is transferred from the primary side to the secondary side. The water in the two systems never mixes unless there is a tube leak, which is what occurred. What happened was the steam generator primary side developed a hole—a leak in a tube—and it contaminated the secondary side. There was a potential for a radiation release to the environment. We turned to our offsite detectors for information related to any potential release.

But we saw a problem with our detectors. Some of the data were retrieved through the

phone lines and some from actually sending teams out to the remote locations to pull the data from the detectors. The problem was that these old analog detectors could store only a certain amount of data—only 30 data points per detector—and any more data than that would be lost to us. It highlighted to us that these old detectors weren't too efficient. So, we decided to upgrade the system with new, digital detectors.

How long was Indian Point depending on these old detectors?

First, it's important to understand that this system is just an augmentation of the environmental monitoring program already in place at Indian Point, which includes various monitoring techniques such as thermoluminescent dosimeters. Other examples include continuous air sampling, vegetation sampling, and fish and invertebrate samples from the Hudson River. This offsite detector system is just another piece of the program. Even for emergency planning, there isn't a requirement for this detector system. While it's something that's worthy of attention, it's not regulatory driven.

Prior to the tube event, the old detectors were in place since 1981, I believe. I wasn't here at the time, but Indian Point installed the system because the event at Three Mile Island in 1979 showed there was a need for improved monitoring techniques for the whole nuclear industry. So the system was installed, and over the



Installation job: Charles Burpoe, senior nuclear environmental monitoring technician at Indian Point, installs a new radiation detector miles away from the plant. (Photo: Eric Weber/Indian Point)

The new digital detector is a single unit with continuous data acquisition, as opposed to the dial-up method. The old detectors had two pressurized ion chambers—one low-range and one high-range—that sat on a type of crossbar on the poles. They had a communication system that had a dial-up phone modem. We had to call the detector and “ask” for data and it would feed us back 30 data points. It didn't always work because there were phone line failures.

We knew the phone line was not going to be reliable for communications, so we decided to have a dual communication technology. The first line would be a radio transmission and the second would be a frame relay—it's a phone system, but it's not a dial-up phone modem.

What are the system's telemetry enhancements?

Telemetry means the automatic transmission and measurement of data from remote sources by wire, radio, or other means. In our application, the data are transferred from the 16 sites by radio waves using Spread Spectrum technology to our radio tower at Indian Point. The data collected over the radio network then go into a data concentrator. This represents our first line of communication.

The second line is through the frame relay, which sends the data through phone lines to the data concentrator. If the system's programming at the plant “sees” that the radio is out, it will switch over to this frame relay.

With this new system, it will receive information points from both communications methods, but it uses either the radio or the frame relay based on the reliability. In other words, there is a lot of redundant data capacity here so that we don't lose any information. This system is much more reliable than a dial-up modem.

The new system has an increased acquisition speed from 15-minute polling to 15-second polling speed. It also allows for one-minute average exposure rates for each individual detector.

What about user enhancements?

User enhancements include the fact that the system is now all Web-based. It's available through the Entergy intranet. Any Entergy employee that is on the company's intranet can look up information at any time. In addition, state and county workers have access to this information through a connection that we provide.

What about cyber security?

Although the system is Web-based, we provide a dedicated telephone connection to the counties instead of by the Internet. This keeps the data secure and removes the chances that someone from outside the plant can get in and do any kind of damage or manipulate the data.

“[T]his system is just an augmentation of the environmental monitoring program already in place at Indian Point.”

years, we were aware that it was based on 1981 technology. Simply put, there were a lot of technological advancements that we didn't take advantage of from 1981 to 2000.

Then we had the tube event in February 2000. At that time, we had these hardwired, dial-up modem phone lines that used to fail quite a bit when we needed to retrieve data. And in this case, we had trouble getting data from the detectors, so we actually had to send technicians out in bucket trucks with laptops to pull data from the detectors. Even though there was no consequential radiation release from the tube event, we realized it was time to get up to speed with current technology.

How does the new system differ from the old one?

Did Indian Point develop this new system?

We worked with vendors in developing it. Reuter-Stokes made the detectors. Another company, Matrikon, of Edmonton, Canada, did the telemetry and Web-based interface. Matrikon is the company that masterminded the communications system. Their local offices did all the computer programming for how the remote unit talks to the data collectors, how the radios are wired in, and for that type of programming. We expect all the new detectors to be installed and the project completed by the end of this summer.

What about ownership of the program?

There are four Indian Point departments involved with the project, in addition to the vendors. The departments are Emergency Planning, Nuclear Environmental Monitoring, System Engineering, and Capital Project Management. Ownership hasn't been a problem in that we all understand what hats we wear.

Emergency Planning leads the project, and is the department that interfaces with state and county officials and sets up the training. They also bring in contractors to assist with that training. For example, since Matrikon designed the Web interface, they're the ones who have been doing the hands-on training with state and county employees.

The Nuclear Environmental Monitoring group has been very good with working with Matrikon, coming up with real solutions to problems, pushing the project to give us more than what we thought we wanted when we started.

System Engineering is new to the project. We're used to having System Engineering in the plant, but they haven't been involved with "outside the plant" issues in the past. For this project, the system engineers brought depth to some of the questions and a lot of the design issues going forward.



View from the top: A radiation monitor in foreground, and Indian Point in the distance. (Photo: Charles Burpoe/Indian Point)

Does the public have any involvement in offsite radiation monitoring?

The answer is no, not currently. When considering public involvement, it's important to think about how the information would be received by someone who has limited knowledge of what the information represents. For example, living near the Three Mile Island plant in Pennsylvania is a woman who monitors information from the Reuter-Stokes. Some

or believe anything I'm telling them. They would think I'm telling them something only because I'm trying to keep my job.

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Capital Project Management was instrumental in getting funding for the project.

What is the cost of the project?

We are not making that information available.

Indian Point is in the public eye quite a bit because of its proximity to New York City.

in the community see it as a great public service. But does everyone realize that every time it rains, the radon daughters get purged from the atmosphere and the data from the Reuter-Stokes is going to spike? The public will see a small increase in radiation levels when it rains, but if someone doesn't understand that, I think they may fear there was some kind of occurrence at the plant.

So, it has to be more than just pouring information out at people. There has to be training. There also needs to be some kind of relationship. I could try to train some community people, but if I don't have a relationship with them, they're not going to trust me

and

Unlike Three Mile Island, we don't have anyone in the community monitoring our data. I don't think community training is something we're going to do at this juncture.

Have you been at public meetings to explain your role in monitoring radiation levels?

I have been at public meetings, but I haven't been in the spotlight. Indian Point has had significant amounts of public hearings, and various counties' officials have passed legislation to close the plant down. As part of the plant's grass-roots effort, I have been to some meetings and other informal settings where I've taken the time to answer questions from people who ask me. I'm not a spokesperson for Entergy, but on a personal level I feel it's my responsibility to try to represent the nuclear power industry for what it is: safe, well-regulated, and providing an efficient way to make electricity. **■**