

Computerization at Point Beach: The present and the future

Computers will continue making jobs more efficient, but don't expect them to take over the task of running a nuclear plant.

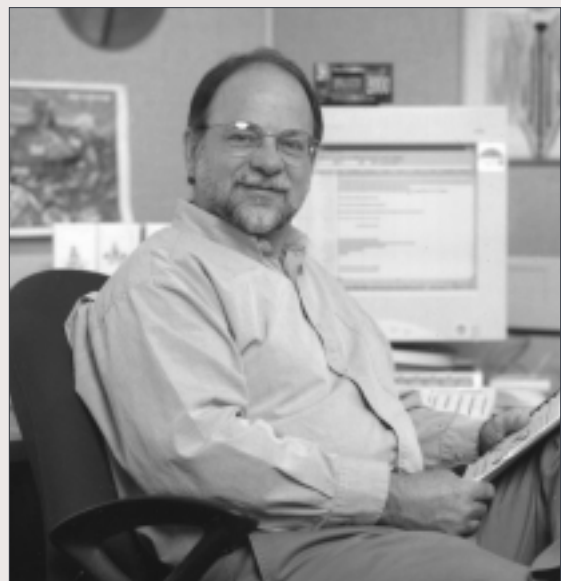
What changes will the coming of a new millennium usher in for computerization at nuclear power plants? Not as many as you might think when it comes to making decisions on operating those plants. Tom Carter and Dave Stevens, two computer professionals with the Wisconsin Electric Power Company, talked about what changes could occur beginning in year 2000, how some of those changes could affect plant staffs, and how Point Beach has prepared for the turnover to Y2K.

Carter heads WEPCO's Information Resources Nuclear Power Group. His staff for Point Beach consists of 13 information technology (IT) professionals, supplemented by contractors, focusing solely on the computer application side. Carter has been in the nuclear industry a relatively short time. He joined WEPCO in January 1998 after 20 years of IT-related experience with a non-nuclear company.

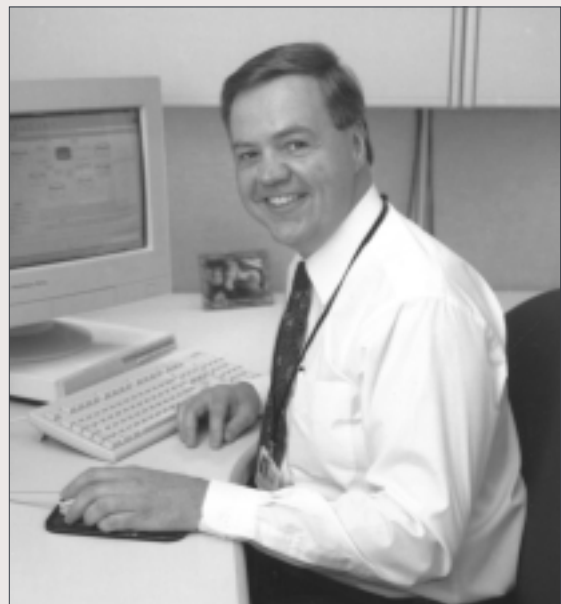
Stevens is project manager for Point Beach's year 2000 program and supervises the group that handles the plant's IT initiatives. His group consists of three people responsible for maintaining computer applications at Point Beach. Stevens has worked at Point Beach for 16 years in various positions, including public information, emergency planning, regulatory services, and as a project manager on a number of large IT projects.

Carter and Stevens are located at WEPCO headquarters, in Milwaukee, Wis. Point Beach is located in Two Rivers, Wis. The plant has a pair of Westinghouse pressurized water reactors with a combined output of 1022 MWe (net).

The interview was conducted by Rick Michal, *NN* senior associate editor.



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What are the jobs that are done manually now that will be done in the future by computers in the nuclear plant?

Stevens: I think right now we have a good balance and are about where we want to be. The increase may be on the side of corporate activities. But in the control room of a nuclear plant, computers don't make decisions, people make operating decisions. It will be a conscious decision as far as automating in the future what we do manually today.

What is the most significant change you see coming for computers in the nuclear industry?

Carter: Generally, I think one of the things we will continue to see is the price of computing power decreasing and the amount of power associated with computers increasing. With that, I think we'll see the physical size of computers going down. For instance, the personal digital assistants (PDAs)—those hand-held computers—will become more prevalent as time goes on. Particularly in our environment I think we could find specialty applications that could be put onto a PDA. An example would be a barcode scanner. A worker could go out into the plant and use it to record information, and then take the information that's been stored in the PDA and transfer it into another computer application to use for various means.

Stevens: One of the significant changes we will see over the next several years is that many computer applications that have been on a local area network will be developed to run in an environment that looks like the Internet. Basically, you will be seeing many of those applications migrating into a Web-based interface for the users so that they will be able to conduct business through the use of the "single view" rather than numerous separate applica-

could be running it off of a laptop computer while sitting in a hotel room across the country. It opens up a lot of doors in terms of the ability to share and get information.

How did things go with the Y2K effort at Point Beach, regarding original time and cost estimates?

Stevens: Our Y2K efforts focused on two fronts: One was on the embedded systems, and the other on business applications. The project has gone according to schedule in that we were able to proclaim our readiness to the Nuclear Regulatory Commission on June 30 for all the critical systems. There was some continuing activity on less important systems as we neared the end of the year. With about 65 days left until the year 2000, our focus was on "putting the polish," so to speak, on our contingency plans. But generally, I think the Y2K project went according to schedule and we were able to stay under our cost estimates. An interesting add-on is that we achieved some long-term benefit from the Y2K project. We went through the process of inventorying all our computer systems and applications, and now we have a good portfolio of applications that we can better manage now and in the future. I think that is typical of what you'd find across the nuclear industry.

Could you give an example of the systems that you say you can now better manage?

Stevens: I am talking particularly about the smaller desktop-type applications developed internally or received from industry groups like EPRI [Electric Power Research Institute] that in the past had not gone through a formal process for installation. Now that we know what we have, we're able to apply our software management program to them and make

sure that they are being appropriately classified and used.

How many computer applications do you have at Point Beach?

Carter: We have a large portfolio consisting of 300 different applications. So, it's quite a mix. Some of the primary systems that we are dealing with are security, chemistry, radiation protection, configuration management, and work management. Our portfolio also includes such things as electronic document management and applications that perform engineering calculations and are used for drawings and computer-based training. In

those 300-plus applications, there is a variety of functions that are performed.

Aside from Y2K, are there any other upgrades in hardware or software at your plant?

Carter: Yes, there are quite a number of them. These are projects that would have been done previously, but because of a Y2K component in some of them, we waited until now to take advantage of the technological improvements that are available at this time.

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Some highlights include the replacement of Point Beach's security system, which focused this year on the software component. Next year, we'll focus on the actual physical improvements to the security system.

We're also wrapping up a substantial effort using state-of-the-art technology in our exposure monitoring and electronic dosimetry systems. We also are replacing our plant process computer system, and that effort is continuing into next year. There is also a configuration management project now going into its third year. Configuration management can be a bit confusing. When you talk with IT people, it means maintaining control over components comprising an application, but from a nuclear perspective it means that we want to synchronize the information that is associated with the physical plant, the license and design basis, and our procedures. In this case, configuration management relates to the nuclear perspective. So, we have a group of about five people dedicated full-time to assessing the portfolio that we have and then using a data base to join the information together from many of the separate systems to provide a perspective that we haven't been able to do previously.

What are your most important day-to-day operational concerns?

Carter: This is probably a good time to segue into how our department is organized. I am leading the applications group within Information Resources. But there is a large contingent of staff in Milwaukee that is supporting the day-to-day operational concerns from an IT perspective. We have a staff that is focused on keeping our internal computer network up and running. We also have people at the Point Beach plant who are responsible for ensuring that desktop computers are working properly and that people with requests have those requests serviced on a timely basis. Those are, from the IT side, some of the operational concerns.

In addition to that, the plant itself has operational concerns in terms of some of the primary systems that we support. Our CHAMPS system, for instance, is responsible

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tions. Using the Web-based applications would be like using the Internet and having access to information about people, equipment, exposures, record keeping—those sorts of things.

Carter: We are seeing a real change in the direction that vendors are developing software to run in that kind of environment. And that change is happening now. As the next generation of each of these applications comes on line, it will probably be the norm—those applications will have a Web-based front end so that most users could get at it that way. The advantage is that it doesn't matter to the user where the application is actually located. As long as the user has appropriate clearance, he

for keeping our equipment information up to date, and all of our work orders go through there. CHAMPS is a packaged software application. We have another system that keeps track of conditions that are reported within the plant and we ensure that those conditions are addressed.

We also have a group associated with our plant process computer. They primarily are engineers, and they have a skill set that also folds into IT. They are responsible for the day-to-day maintenance of that system.

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Is there such a thing as a typical day for each of you in the performance of your jobs? And, is there anything that your Point Beach staffs do that is unique in the industry?

Carter: I'm not sure that we necessarily do it better than anyone else. And I have to chuckle a bit about “the typical day” because many times, at least from my perspective, I don't know if there is a typical day. Much of my staff has been focused on various projects. We have individuals who are assigned as liaisons to the various work groups within the plant and they are, in turn, responsible for ensuring that the systems associated with those work groups are functional. For initiatives within those work groups, the IT staff ensures that those projects are being carried out according to schedule and scope, and executes the IT-related tasks.

Stevens: One of the things that strikes me that we may be doing a bit differently from others in the industry is that we have a rigorous program to install new applications in our environment. In talking to some of my industry counterparts, in many respects it's kind of a free-for-all, with users obtaining and installing applications on the network or their workstations. Those applications aren't necessarily carefully assessed or controlled in terms of potential interactions with other applications that are already on the computing system. We go through a rigorous testing and analysis process before we put anything into the production environment. That is something that during the last year or so we have tightly buttoned up.

Carter: There is another component related to Dave's point, and that is a cross-functional team that we established in 1998 called the IT Review Committee. This committee consists of Dave, me, and some of our other associates to deal with information such as configuration management. The process is such that if there is an IT-related request that is coming from the nuclear power business unit, it has to go through this committee for review in order to make sure that it is a sound

request, that there aren't other options that haven't been considered, and to look at how the request would fit into the overall architecture of the plant as far as the computer systems are concerned. This is more of a “good business” process, apart from a nuclear software quality process.

Stevens: I can offer an example of the IT Review Committee in action. When someone has a new application that they want to have access to, or if they want to make a change to an application that already exists, the application—such as a new component or software—is first installed in a laboratory that resembles our normal computing network. This laboratory is in Milwaukee. What is done there is to see if the application conflicts with any of the existing components. The way that software is built

these days, often there are shared components that could cause conflicts. So we ferret those out in a laboratory. The application user has an opportunity to test the application in the laboratory to make sure it performs according to his or her requirements before we actually move it into the production environment.

Is that rigorous process part of assuring software quality?

Stevens: It certainly plays a role in that process, but separate from it is our nuclear software quality assurance program. That program has a separate set of procedures and some of the members of Tom's staff help support it. During the “good business” process that we just described, some of the QA software testing is performed there as well. The laboratory just happens to be a good environment. We test all software and applications there. For example, if someone wanted to install a spreadsheet program or a graphic design program, those kinds of software would go through the same process. It's not the kind of thing where a person could go ahead and install it on a PC.

Carter: We've also addressed the security on the PCs so that individuals can't install software on their local drives. As the software goes through this process, it's set up so that it runs off of a server rather than a desktop. It's all part of one large network, so that if someone has a desktop failure, for instance, we can remove that particular desktop and replace it in a short amount of time to get that person productive again without having to reinstall all the software onto one PC.

Stevens: The intent of this rigorous process is not to control, but rather to reduce our overall maintenance costs and assure that when new applications are moved into production they are going to work without causing conflicts.

How does your department interface with other departments?

Carter: The IT Review Committee is a cross-functional team that allows our Information Resources Nuclear Power Group to work with the Nuclear Power Business Unit. That's the mechanism that we use on a formal basis. On an informal basis, with me in Information Resources and Dave in the Business Unit, we work very closely with one another. As a matter of fact, our desks are right across the hall from each other, so physically we are close and we work together on a day-to-day basis.

Regarding the IT Review Committee as a cross-functional team, does that mean that each plant department is represented, so that if maintenance has a problem, for example, it can go to its maintenance representative on the committee?

Stevens: Actually there are a lot of different ways that it might be handled. If there is an immediate concern, we do trouble reporting to a Help Desk. If there is a new issue or some new application that someone would like to explore, that request would be made to a member of my staff and we would review it and, depending on its nature, if there didn't seem to be any potential configuration management issues or high-cost issues, we would proceed with it. Otherwise, it would be referred to the IT Review Committee for consideration in the context of all the other IT requests that are on the platter. That's how we integrate any computer initiatives at our plant.

Are you involved with any computer organizations or do you network with any computer professionals in the nuclear industry?

Carter: We are members of a national users group called NUSMG [Nuclear Utilities Software Management Group—NN, Feb. 1997, p. 36]. We use that as a forum to share information within the industry, and find that it's a good means to communicate with other people.

Do you use a lot of “off-the-shelf” software, or do you get vendors and staff to create programs for you?

Carter: Yes to all of that. Our portfolio is quite a mix, from commercially purchased software, to software that has been developed by vendors specifically for us, to software that has been developed by people in our Information Resources group or engineering staff. Our approach, first of all, is see whether a request would be satisfied within the existing portfolio. If not, our next step would be to look at packaged software and see if we could find something already on the market that would satisfy the need. Typically, you can find software that has already been developed, and there is quite an improvement in the overall productivity of the staff by using packaged software rather than developing it internally. As a final step, if we've exhausted the other two possibilities, we will develop it internally. **NN**