

Control system conserves staff time, saves maintenance costs

By James Brown, vice president, RACO Manufacturing and Engineering Company, Emeryville, Calif.

At most utilities, the cost of hiring and keeping good people on the job continues to escalate. Managers know that efficient usage of staff time is a priority issue.

The Wolf Creek Highway Water District of Beaverton, Ore., serves the city of Portland's suburban and industrial areas and comprises the largest potable water distribution system in the state. Its system of 20 large reservoirs and seven pumping stations is extensive. To most efficiently utilize staff and manage its water resources and distribution facilities, Wolf Creek recently installed a new system wide SCADA control system.

Key components of Wolf Creek's control system are a Texas Instruments programmable logic controller (PLC) and a RACO Chatterbox Model CB-8 automatic dialing remote monitoring system. The control system was designed, furnished, and installed by Stead & Baggerly, Inc., of Bellevue Wash.

The control system is programmed to monitor high and low reservoir levels, pressure deviation, pump



Wolf Creek Highway Water District's SCADA system head-quarters facility consists of six 42-in. bays containing conventional operator interface devices such as recorders, switches, meters, and alarm indicators. Microprocessor controlled PLC subsystems, automatic dialing remote monitoring systems, and dedicated communications modules are located behind the panels.

failure, electrical power failure, and communications line failure at sites throughout the District as well as to ensure its own proper operation. With the control system in place, Wolf Creek can operate its monitored facilities unattended from 5 p.m. to 6:30 a.m. on weekdays and around the clock on weekends and holidays. This represents a considerable savings in staff time.

If an alarm condition occurs, the Chatterbox auto-

dialer reports to the District's Central Station for remedial action. During periods when the Central Station is not staffed, the alarm system is in place to call for help if any of the alarm conditions are met. Under these conditions, the autodialer will call a preprogrammed list of phone numbers until one of the numbers is answered. It then reports the station identification and alarm condition in plain English. The person called acknowledges the alarm by pressing a button on the call phone.

According to Mike Pinder, maintenance supervisor of the District facilities, "The Chatterbox has been very cost effective and has proven to be invaluable in helping us deal with the variety of equipment and conditions in our system. It has improved plant operation through most efficient pumping and lower maintenance costs. And it lets us run only one shift at the monitored facilities for better utilization of our personnel."

During the past year, Wolf Creek has experienced several pump failures and power outages. When these emergencies occurred, operations personnel were contacted by the autodialer units. Designated staff members were able to get to the facilities in time to take remedial action.

Says Pinder, "The Chatterbox helps us get to the trouble faster and better prepared. We can call it to get more information about the alarm condition. And we can travel directly to the trouble location without having to go into the main office first."

Once an alarm is tripped, the units continue to call even if an alarm condition returns to normal. This feature ensures that intermittent or short-duration alarm conditions do not go unnoticed. Nuisance calls can be avoided by varying the alarm response time.

The solid-state autodialer units represent a high level of technology and can perform a variety of additional functions. Besides phone calling, each unit incorporates a status-checking capability. The user can call in at any time to hear a synthesized voice message giving the present status of all monitored functions. Says Pinder, "Status checking is an excellent feature I can anticipate trouble by calling into the Chatterbox for a status report. This gives us extra time before an alarm condition occurs."

Other features include an autocall function that verifies operation of the alarm system and telephone links. Numbers are called at a preprogrammed interval, usually every 24 hours, to make certain that the system is functioning properly. The unit warns if the alarm switch is off or no phone



One switch of the automatic dialing remote monitoring systems, which are located on the front panel, controls the release of alarm data from the PLC to the dialer, switches the phone line wires into the dialer, and places the system in the desired operating mode.

numbers have been entered for calling. A built-in microphone permits a called party to listen to local sounds as well as have a two-way conversation with personnel at the autodialer site.

"The Chatterbox is a 100 percent improvement over our previous equipment setup," Pinder reports. It replaced a tape dialer that could only call one number. We used that number to call a central radio dispatcher, who would, in turn call a pager. Now with the autodialers doing the work, the person responsible for the alarm calls does not have to be close to the office during his or her off-duty hours.

Because of the solid-state design, the autodialer units do not require an audio tape loop, which can break or wear out. All voice messages are preprogrammed by the user and stored in the system's nonvolatile memory. The units can be programmed at the system console or from any telephone.

A computer interface provides communication to local or remote printers. The system can be equipped to produce printed reports of alarm conditions, a capability that Wolf Creek plans to add later this year. □