Small New England water system implements 24-hr monitoring

By Joseph Rock, eastern regional sales manager, RACO Manufacturing and Engineering Co., Emeryville, Calif.

Two New England communities now have round-the-clock monitoring of their municipal water distribution facilities, ensuring that water system managers are notified of and can respond quickly to off-hour service problems.

The Hampton (N.H.) Water Works Co. supplies potable water to several seacoast communities in southern New Hampshire, and the Salisbury (Mass.) Water Supply Co. serves Salisbury residents. Although the two companies have separate water sources and distribution facilities, they are operated by the same personnel out of a common office. Together they serve about 11,000 customers during peak summer vacation months, when daily water delivery is near 7 mil gal.

The primary source of water for both companies is groundwater pumped from a network of wells. Salisbury supplements this supply with small amounts of water imported from an adjacent community system. Water is pumped into six above-ground tanks located throughout the combined system.

System upgrade undertaken

The Hampton and Salisbury distribution systems are connected through a variety of communications devices to a central pumping station, where the status of the overall system is monitored by company staff during normal working hours.

In a recent system upgrade undertaken to improve service to an expanding customer base and to enhance protection of system equipment, the companies installed an automated monitoring system that takes over status checking and alarm reporting functions at night and on weekends. After investigating alternatives, including hiring additional personnel, the companies opted to install the Verbatim Model VSS-8C Autodialer/Alarm Monitor from RACO Manufacturing and Engineering Co. of Emeryville, Calif. Capital cost of the equipment was approximately $1,600; installation, operation, and maintenance costs are minimal.

According to Laurel Flax, production superintendent of the water companies, “The autodialer has given us far greater control over our system. Before it was installed, we had no way to monitor our plant facilities during nights and on weekends. We had to depend on our customers and local fire departments to notify us of service problems during off hours. Now we get the information first hand, often before any interruption of service. Most of the time, we have enough warning to head off trouble before it happens.”

Tank levels, fire pump critical monitoring points

The Verbatim system is programmed to monitor 11 key points in the two systems, the most critical being water level in any of the storage tanks and the operation of a large fire-service pump.

Hampton’s Verbatim system is equipped with an optional analog input card, which receives 4 - 20-mA signals from the storage tanks. The unit has been programmed to convert these signals into actual water levels and to send an alarm call when the water level in any tank goes too high or too low. The Verbatim unit is set up to call a preprogrammed list of up to 16 phone numbers until one of the numbers is answered. When an alarm call is completed, the unit reports the status of the water level as well as the specific alarm condition in the user’s own voice-recorded message. Acknowledgement of the alarm is accomplished simply by pressing a button on the called phone.

The Verbatim autodialer continues calling even if an alarm condition returns to normal-interruption, short-duration alarm conditions do not go unnoticed. Once tripped, calling is continued until acknowledged.

Status checking feature

Verbatim systems represent the highest level of technology in the autodialer field. They are completely solid state and can do much more than just dial telephone numbers. In addition to phone calling, the new-generation autodialer has a status-checking capability. The user can call in at any time to hear a voice message giving the present status of monitored functions.

“Status checking is an excellent feature,” notes Flax. “Instead of making a physical check of our facilities, we simply call in for a status report. I can anticipate trouble by calling in for level check when I anticipate heavy usage. This gives me extra time before an alarm condition occurs.”

A built-in speaker phone permits a called party to listen to local sounds as well as having a two-way conversation with personnel at the autodialer site.

Flax added, The Verbatim unit is easy to use on a day-to-day basis. If we want to add or change a

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voice message, we simply record the new version at the
system console. We’ve also had some personnel
changes. We can program new phone numbers into
the system in minutes.”

The Verbatim unit stores in memory anything that
can be spoken and plays it back exactly as recorded.
Using digitized voice technology, all voice messages
are preprogrammed by the user and stored in the
system’s nonvolatile memory. Service personnel do
not have to be called in to change telephone numbers
or voice messages. The Verbatim unit is user-pro-
grammable at the system console or from any tele-
phone.

The Verbatim system installed in Hampton is
currently using eight digital inputs for monitoring
functions. Optional expansion boards let the user
increase the number of digital input channels to 16,
24, or 32. Similarly, the unit can accommodate 4, 8, or
16 analog signal inputs; four analog inputs are being
utilized in the Hampton facility.
The system also provides for independent pro-
gramming of each channel for type of alarm and
reporting of run time and totalized pulses. One or more
channels can be programmed for run-time metering. A
device such as a pump motor can be monitored for
total run time in order to properly schedule mainte-
nance. In a similar manner, one or more channels can
be programmed for pulse totalizing.

Expansion possibilities
Future possibilities being considered by Hampton
include expanding the present Verbatim unit so that
each pump in the system can be monitored individu-
ally and installing additional Verbatim systems at
satellite locations to broaden the amount of alarm
coverage.

Hampton is also considering equipping the Ver-
batim unit with an interface card that would permit it to
communicate with a centrally located printer, which
would generate a hard-copy record of all alarm activi-
ties. If additional Verbatim units are utilized, a cen-
trally-located computer, modem, and printer could be
used to poll the remote Verbatim units and report on
alarms and events at those locations.
Verbatim systems can also be equipped for
remote supervisory control, which lets an operator
turn equipment on or off via any telephone. A super-
visory control and data acquisition system is also
available for complete control of data collection and
reporting via computer using specially developed
RACO software.