Lookout Provides Island-Wide Monitoring of Wastewater Systems

by Chris Cunha, SCADA Project Manager, Oahu. Hawaii

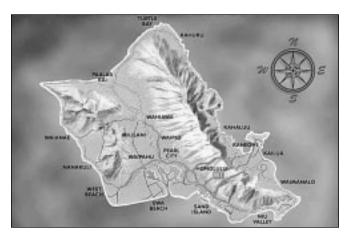
The Challenge: Upgrading a DOS-based wastewater SCADA system with a Windows-based process monitoring system.

The Solution: Using National Instruments Lookout software to upgrade the existing SCADA system quickly and easily.

The 600 square mile island of Oahu, Hawaii, population 800,000, began wastewater operations in 1901 when instrumentation and control systems were simple and basic. As wastewater capacity demands increased and effluent limits became tighter, we expanded and upgraded the control systems at regular intervals. We recently undertook a major project, focusing on Windows-based computer systems, using Lookout software to provide enhanced monitoring capabilities to an existing DOS-based



Oahu, Hawaii, uses Lookout software to monitor their wastewater operation.



supervisory control and data acquisition (SCADA) system that has been in operation since 1992.

Existing System Configuration
The existing SCADA system monitors and controls more than 9,000 data points from a total of 115 remote terminal units (RTUs) located at 65 wastewater pumping stations and 12 wastewater treatment facilities around the island. Four of the wastewater treatment plants have standalone SCADA systems that are used for

monitoring and control of equipment at the plants. These stand-alone systems and all the information from the RTUs are relayed to a central command center located on Sand Island near the Honolulu International Airport. Leased-line telephone circuits and microwave links accomplish the communications

between the RTUs and standalone systems.

Choosing a New System
After evaluating major HMI/SCADA
companies, such as Wonderware and
IMAX, we chose National Instruments
Lookout for the new monitoring system
because of its ease of setup and use, as well
as its extensive graphics capabilities. Each
facility now has a control panel that
displays all equipment status and alarm
conditions. In addition, they have

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hypertrends and digital images of the exterior and interior of the facilities. We use extensive high-resolution graphics with animators and play waves.

Barrington Systems of San Carlos, CA, provided the RTUs and the DOS-based control system software. Because no software driver was available for National Instruments Lookout to talk to the RTUs, we selected Centaurus Systems, Inc., of San Diego, CA, to provide the interface software.

We kept the existing SCADA system in place to provide a real-time database from which the Lookout computer system could obtain the necessary data. We





connected the new Lookout computer system to the existing SCADA system with a high-speed communications link.

Security

We set up the system so the SCADA operators can monitor any facility at any time. The system jumps to the control panel for any facility in which an alarm condition is detected. Audible recorded play-waves also sound so the operators know that either an alarm condition exists or a designated event happens; for example, a door opening at a facility. Each employee is issued a bar-coded ID card that must be read by a card reader at each facility. We then display the employee's picture on the control panel.

Results

With the Lookout system, monitoring wastewater facilities has become easier and

more informative. National Instruments Lookout was the easiest software to configure of the available packages;

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operators appreciate this ease of use. Specifically, because of the trending capability in Lookout, we can monitor more of our plant and get additional information for a much greater overview of the system. With the older DOS-based system, we could only pull up eight hours of data, but with more than 100 stations over the island it is an added benefit to

pull up a whole day's or just an hour's worth of activity.

Author Biographies Chris Cunha, SCADA Project Manager, has been employed with the City and County of Honolulu for the past 19 years as the electrical/electronic superintendent for the wastewater treatment and disposal division.

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