An oil-fired electric power plant is using a programmable logic controller and Verbatim Gateway autodialer to monitor their groundwater remediation project.

The power plant is fed by four 2.5 million gallon above-ground storage tanks. Fuel oil is pumped from the storage tanks to the power plant via a 200 yard long underground pipeline.

Oil leaks along the underground pipeline were recently discovered. To remedy the situation, environmental consultants were called in to prevent further migration of the oil to local water supplies and a nearby bay, as well as provide groundwater and soil remediation services.

Five recovery wells were drilled along the pipeline to pump water to the surface for treatment. Clean water is discharged to the POTW and oil that is separated from the water is collected for recycling. The project is expected to take from three to five years to complete.

Test vaults were placed along the oil and water lines for monitoring by a system consisting of a programmable logic controller and Verbatim Gateway Autodialer. Controller data points were programmed for operating parameters such as pump operation, oil and water leaks, quantities of material pumped, and tank levels. The Verbatim Gateway was programmed to poll the controller for alarm conditions and to call remediation staff personnel in an emergency.

The Verbatim Gateway is equipped for local data logging. The System is connected to a serial printer to provide a hardcopy record of all events. At user-programmable intervals, the system will print the status of all channels on the local printer including run time, totalizer, and analog input values. Reports also include details of alarm activity such as test vault station identi-fication, date and time of report, alarm status, phone numbers called, and conditions of acknowledgement.

During the early stages of the project, the consultants made frequent status checks on system operation from their offices which were located some distance from the site. They liked the ability to call the Verbatim Gateway over their standard TouchTone® office telephone. The system has since gone fully automatic, with the Verbatim Gateway programmed to call staff phone numbers in the event of an emergency.

VERBATIM GATEWAY

The RACO Verbatim Gateway is an Automatic Dialing and Remote Monitoring System combining an autodialer with an alarm and control system having full microprocessor-based operation and convenient user programmability.
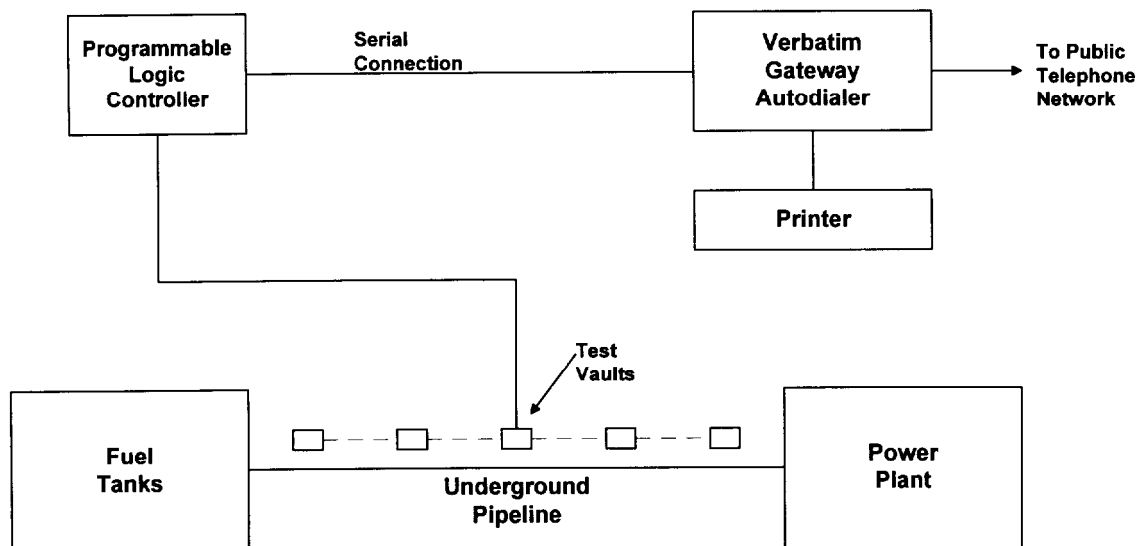
Groundwater Remediation Project Alarm System Network Diagram

Verbatim Gateway units provide bidirectional communications with programmable logic controller networks via serial cable connection. The Verbatim Gateway does this without requiring the use of controller outputs or modification of programs. The Verbatim Gateway, in turn, is connected to the public telephone network via standard plug-in phone jacks.

Upon receipt of appropriate contact or logic level inputs from the programmable logic controller network indicating an alarm, the Verbatim Gateway calls a list of phone numbers and provides clear voice-message reports of the alarm condition.

Operating personnel can also call in at any time from any standard TouchTone® telephone to check the status of any channel, modify alarm criteria and monitoring points, and alter process variables and setpoints.

Continuous real-time communication between the Verbatim Gateway and the programmable logic controller network is performed via a serial link using the protocols supported by specific controller models. Any controller I/O points and data registers can be manually altered. In addition, the system provides automatic monitoring of as many as 96 points — points reflecting any combination of discrete, analog, timer, counter, or other controller data objects.

The Verbatim Gateway uses only a single cable connection to deliver its extensive functionality, avoiding the cost of complex wiring, additional controller outputs, and relays. Monitoring points can be added at costs that are about 40% less than those associated with traditional contoller-to-input configurations.

Upon receipt of an alarm condition, the Verbatim Gateway starts calling a list of up to 16 pre-programmed phone numbers, calling until it gets an answer. When a connection is made, the system reports the station identity and alarm condition by way of the user's own voice-recorded messages.

When used in the status checking mode, the user can call in at any time from any standard TouchTone® telephone to hear a voice message giving the current status of monitored functions.

Alarm and status messages are digitally pre-recorded in the user's own voice and stored in the Verbatim Gateway's non-volatile memory. The messages are then selectively played back exactly as recorded when an alarm occurs or a status condition is requested.

RACO®
REMOTE ALARMS AND CONTROLS