PHORGOTTEN PHENOMENA

Odd Occurrences During Cathodic Protection Troubleshooting

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"Stop, Look, and Listen." These words from railroad crossing signs are good ones to keep in mind when troubleshooting cathodic protection (CP). Some troubleshooting efforts are pretty straightforward, involving depleted anodes, broken wires, burned out rectifier stacks, and the like. But there are occasions when nothing seems to make sense, and then it's time to "stop, look, and listen" and figure it out. Here are a few experiences from nearly 45 years of CP work.

The Intermittent Short

We found an intermittent short on an electrically isolated hydraulic elevator cylinder during an annual CP check. While inspecting the rectifier, we noticed that the output current would occasionally jump up an amp or so. In the pit, with the elevator locked out above, the potential data from the test holes indicated good CP. Later, with the elevator back in service, we found that the jump in current occurred when the elevator came down to the first floor. Back in the pit we discovered that the coil safety springs on the pit floor had been extended a bit from previous years and made contact with the elevator cab when it came down to the first floor, causing a short. After little work by the elevator mechanic, it was fixed.

'Anodes on the Pipeline'

Specification writers take heed. A gas company installed a new line from a town border station to a district regulator site. Company personnel advised us that there were magnesium anodes on the line and that it was isolated at each end. Testing revealed no CP. The isolators were good and there was no indication of any shorts. We sat down with the people involved. The owner said the contractor, who was unfamiliar with CP, was instructed to "put anodes on the pipe every 100 ft (30.5 m)." That's just what was done; an anode was dropped on the pipe every 100 ft. But no instruction was given about attaching the wire! Moral of the story? Write thorough and detailed specifications.

Shorted Underground Storage Tank

All but one tank in a group of newly installed tanks having pre-engineered CP showed good CP. It seemed obvious that a short existed somewhere, but we couldn't find one. Finally, we discovered that a steel electrical conduit had contacted the tank underground. We could clear the short by disconnecting the conduit at the building, but electrically the conduit had to be grounded. The electrical inspectors finally let us put an isolating union in the conduit with a decoupling device across it. We had our CP and the electricians had their ground. Everybody was happy.

Advise Workers About Cathodic Protection Wiring

Another situation involved an aboveground storage tank that had impressed current anodes ringing the tank 4 ft (1.2 m) from its edge. One day the facility manager called to say the rectifier output

current was zero. The cause was evident when we arrived. Exactly 4 ft out from the tank were four brand-new monitoring wells. No one had told the installers that the CP cable was 4 ft out from the tank. It was easy to find the cable breaks. Based on this scenario, it is important to talk to people before they come in to do work on your facility.

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