

Army Discovers Inexpensive Alternative to Restore Damaged Power Cables

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The U.S. Army knew it had a serious service problem on its hands when frequent power outages at Hawaii's Aliamanu Military Reservation (AMR) often lasted 14 hours, thanks to 20-year-old deteriorating cables. So when the local newspaper reported residents were fed up with the inconvenience, the Army made a commitment to solve the problem immediately.

AMR has approximately 129,000 linear feet of direct-buried power cable in 8 loops that service 2,500 family housing units. The majority of primary cable is 2/0 aluminum non-jacketed concentric neutral rated at 15kV, and the system is 7.2 kV. According to Dennis Chung, the Army Corps of Engineers' Contracting Officer's Representative in the Honolulu Engineer District and Team Leader for the AMR Project Office, conservative estimates put the cost to replace all cable at AMR as high as \$16 million, and it would likely take up to five years to scope, approve, fund, contract and complete the project. Clearly, a cost-effective, short-term solution was needed to address electrical reliability immediately.

In seeking a solution, the Army's Directorate of Public Works (DPW) in Honolulu learned about CableCURE treatment, a proprietary silicone fluid that eliminates "water treeing" (the leading cause of power cable failure), while at the same time restoring the dielectric strength of old cable to a like-new state. Treatment is a fraction of the cost of cable replacement and about six times more efficient since the process requires no trenching or drilling; crews only need access to the two ends of the cable to inject the fluid into the cable strands.

About the same time the DPW was considering CableCURE treatment, the Navy's Public Works Center (PWC), the agency that maintains AMR's utilities, also recommended CableCURE treatment as a quick-term solution. Based on their research and PWC's recommendation, the DPW decided to test CableCURE treatment on 23,500 linear feet of AMR's most deteriorated cable. Wire DynamiX (formerly UTILX), providers of CableCURE service, was awarded the contract in September 2001.

As the project got underway, Wire DynamiX worked with the PWC crews that service the cables to familiarize them with the treatment process. This helped the PWC set aside some initial reluctance over being exposed to chemically treated cable. In fact, the PWC safety officer's review of the Wire DynamiX safety manual found it was as strict as the Corps of Engineers' safety manual.

To make sure everything went smoothly, Wire DynamiX also worked within the interdepartmental bureaucracies to schedule power outages to treat the cables and minimize disruptions for the residents. "They had to learn how to work with our bureaucracy and they were very flexible and very professional," says Chung.

The focus was then turned to the quality of the concentric neutrals, a situation that put the knowledge and

expertise of the Wire DynamiX crew to test.

After 20 years buried in volcanic rock and alkaline soil, many of the concentric neutrals on the subject cables were badly deteriorated. The crew performed a test, utilizing a Time Domain Reflectometer (TDR), to evaluate the condition of neutrals and to identify buried splices in the cable. Many of these old splices were blocked and would not allow the silicone fluid to flow. To remedy this situation, old splices were replaced with industry standard pre-molded splices. Replacing these splices took a little time, but once that was completed, the crew worked efficiently to make up time and successfully restored cable reliability within the contract period and budget, according to Chung.

The result of CableCURE treatment was a significant reduction of unscheduled power outages, and Wire DynamiX was awarded additional contracts to complete treatment on AMR's remaining cable. At a total estimated cost of \$1.3 million, CableCURE treatment was just 9% of the cost to replace all of AMR's cable. "That 9% was a small investment to give DPW a reliable primary cable service to AMR," he says. "To me that's the bottom line."

For further information on the CableCURE products and services, go to www.wiredynamix.com.

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