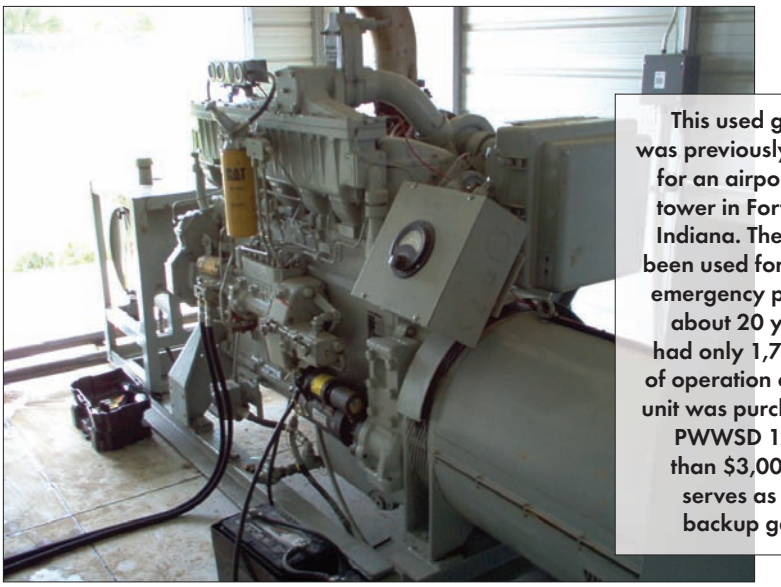
By Pat McCool, KRWA Consultant

Wholesale District 12 prepared for possible electrical power outages

Public Wholesale Water Supply District 12 (the District) serves ten water supplies in Osage, Coffey, Franklin, and Anderson counties in east-central Kansas. Those water supplies are the cities of Lyndon, Melvern, Quenemo, Waverly, Lebo, Pomona, Williamsburg, and Osage RWD 4, Coffey RWD 3 and Anderson RWD 4. The District supplies water to more than 9,000 persons.

KRWA and Kansas Municipal Utilities have located scores of generators for cities and RWDs during periods of electrical power outages. Floods, tornados, ice storms and high winds have been the main causes of power outages lasting from a day to several weeks. In other cases, emergency water supply connections such as standby wells or a connection to another water supply have been used to avoid water outages.

Assistant Plant Manager Joe Kirby, Operator Craig Ellis, Operator Carolyn Mayer and Plant Manager Connie Ralph.



This used generator was previously backup for an airport control tower in Fort Wayne, Indiana. The unit had been used for standby emergency power for about 20 years and had only 1,700 hours of operation on it. This unit was purchased by PWWSD 12 for less than $3,000. It now serves as the plant backup generator.

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But the capability of using standby power is the best way to avoid water outages as electrical outages are sometimes over a widespread area thus possibly prohibiting the use of emergency water supplies. Such was the case during the widespread flooding in southeast Kansas in late June 2007. In that disaster many water supplies were without power for many days and consequently water outages occurred.

The District operates a surface water treatment plant. The plant is located on the south side of Melvern Reservoir south of Topeka. Melvern Reservoir is the District's water source. The District board and staff have taken steps over the last 18 months to address the possibility of power outages at the plant and the water intake. Because of their action, the ten water supplies served by the District will now have a good supply of water if a local or widespread power outage should occur.

The District staff was the central, integral part of the project. They determined the scope and sizing of the project, completed much of the work, coordinated all the work and contracted with local contractors for other aspects of the project. Their involvement resulted in a significant cost savings for the project. It has also given them a detailed knowledge of the system that they will now operate and maintain.

Two generators needed

The "heart" of the project was obtaining the two power generators: one for the water treatment plant and one for the water supply intake. The staff first determined how much electrical power was needed at both locations. Then they contacted Federal Surplus in Topeka to see what used power generation equipment was available. They were fortunate in that generators with diesel motors for both locations were available.

The first generator found in the Fall of 2007 was a 125 KW generator with a Caterpillar 3406 diesel motor. The used generator was in an airport control tower in Fort Wayne, Indiana. This unit had been used for standby, emergency power for about 20 years and had only 1,700 hours of operation on it. This unit was purchased for less than $3,000 not including removal from its existing building and transportation to Kansas.

Plant operator Craig Ellis and local hauling contractor Jesse Knight drove to Fort Wayne. There they met their anticipated challenge; how to remove the large generator/motor unit from the building that the unit was in. They fortunately had many tools and big-machine rollers with them. They had to remove all electrical cabinets, jack-up the unit and make many turns to get the unit out of the building. They even had to construct a ramp to get the unit beyond a two-foot drop in their path.

This photo shows the manual switchgear to change from purchased power to emergency power.

The District had both motors inspected by the Topeka Caterpillar dealer and both were in very good condition.

Once outside, getting the generator/motor unit on to the trailer presented the biggest problem yet. But luck was good in that there was a contractor working nearby who assisted with his backhoe in moving and lifting the generator onto the Kansas fifth-wheel trailer. After they "tipped" the contractor for his time and trouble, all that was left then was tie-down and the drive back. Their trip was completed in three days.

The second generator for the raw water intake was located in the Spring of 2008. It was a 175 KW Caterpillar generator unit that was picked up in Topeka in April 2008. This unit came

Surplus Property available to cities, RWDs

See the following contacts for more information about surplus property.

Federal Surplus
785-296-2351 • Fax 785-296-4060

State Surplus
785-296-2334 • Fax 785-296-7427

Law Enforcement Support
785-368-7438 • Fax 785-296-7427

Web Site:
www.da.ks.gov/surplus/

This generator and motor obtained from a Kentucky location, cost around $10,000 and had only 153 hours of use.

This small building houses the plant generator. Note motor cooling radiator to left of building.

This photo shows the Public Wholesale Water Supply District 12 water treatment plant located at Melvern Reservoir.

from a Kentucky location, cost around $10,000 and had only 153 hours of use on it.

Since the second generator/motor unit is to be used at the water intake at the lake, a trailer had to be purchased for transporting the unit from the plant storage location to the lake. The District was able to locate and purchase a 10-ton trailer with new tires from Federal Surplus for less than $500. This unit was then installed on the trailer.

The District had both motors inspected by the Topeka Caterpillar dealer and both were in very good condition. The district then purchased a 28-gallon fuel tank for each motor and a 100-gallon tank for bulk fuel storage. A new building was then constructed for the plant unit. The water intake unit with trailer is to be stored at the plant storage/equipment building.

Last summer the District requested bids for installing the manual switching, hookup to the power grid, electrical controls and the wiring for the plant generator. Unfortunately, the bids came in too high due to the high cost of copper wiring. Then early in 2009, bids were much less due to the decrease in the price of electrical wiring. The District decided that it was time to install the electrical equipment. Davin Electric, Inc., of Topeka installed the switching equipment and wiring.

While the final cost figures are not yet known, it is estimated that the project cost will be probably around $40,000. Considering today's cost of equipment, the District saved a substantial amount of money in completing the project in-house along with some work by local contractors.

With this project now completed, the staff is looking for ways to better prepare for possible upcoming power outages. If power outages are widespread and for an extended period of time, transporting and fueling for the motors will take considerable time; and that is assuming the fuel is readily available. Obtaining fuel and fuel storage are now the next steps in providing a good, dependable water supply during extended power outages.

Pat McCool has been with KRWA since January 2004. He previously worked for KDHE for 30 years. Pat has a B.S. in Chemical Engineering and a M.S. in Environmental Engineering from the University of Kansas. He is a registered Professional Engineer in Kansas.