



ENERGY SUPPLY
McINTOSH POWER PLANT
3030 E. Lake Parker Dr.
Lakeland, FL 33805

On June 26, 2000, Units 2 and 3 sustained a lightning event that caused the failure of the motors to 21, 22, and 32 circ water pumps.

On October 12, 2000, 32 circ water pump motor failed. This failure was later determined by EASA (Electrical Apparatus Service Association) to have been damaged by a surge event.

On October 20, 2000, there was a failure of equipment on Unit 8 at Larsen Power Plant. This caused a surge event to be transmitted through the 69 KV lines to the McIntosh Power Plant. It was observed that several pieces of equipment operated differently during the duration of the event.

On October 21, 2000, 22 circ water pump motor failed. After disassembly at the repair facility, it was determined that this motor had failed as the result of a surge event. This damage could be directly traced to the surge event on October 20, 2000.

Cost of Repair:

The cost of repair of 21 and 22 circ water pump motors was \$20,000 each for each event.

The cost of repair of 32 circ water pump motor was \$50,000 each for each event.

Additional undocumented costs are labor for removal / installation and crane rental.

Cost of Lost Generation:

During the June event, Unit 2 was operated at reduced capacity because of the availability of only 1 circ water pump motor.

The cost for the June event for Unit 3 was \$23,000.00 per day for 12 days for a projected total cost of \$276,000.00.

The cost for the October event for Unit 3 was \$5,000.00 per day for 31 days for a projected total cost of \$155,000.00.

Summary:

It will be cheaper to install lightning and surge protection for the circ water pumps than to repair the motors after they have been damaged by an event.

Total cost for lost generation for local and wholesale sales, labor, equipment rentals was \$786,000.00 for the period of June 26, 2000 through November 15, 2000.

The cost of surge protection for Unit 2 and Unit 3 was approx. \$80,000.00.

Since installation of the surge and lightning protection units, we have not had a failure of the motors. There has been many an opportunity for lightning to damage the motors as we are situated in an area where severe weather is possible in the Spring and Summer.

Recently we had an event where there was a documented surge on the main feeder line that provides power to the Unit 2 motors. The question was asked "Why didn't we have a problem with the motors?". The answer is that we installed surge protection equipment.

We are currently doing periodic testing of these motors. The tests involve checking the insulation resistance of the motor. Results for the latest tests are the same as the results from when the motor was returned after being rewound. The conclusion that can be made from this is that the lightning and surge protection equipment is protecting the motor from insulation degradation due to unseen surges.

From the Desk of:

Skip Guthrie
Electrical Engineer
City of Lakeland, FL
Phone: 863-834-8635