

Alaska Energy Cost Reduction Program Progress Report

Grantee: Alaska Power & Telephone Company (AP&T)

Grant Contact # UAF 10-0054

Period of Report: Second Quarter 2010 (April 1 through June 30, 2009)

Project Name: Yukon River Hydrokinetic Project

Quarterly project activities completed:

Manufacturing of project equipment was completed in May and equipment delivered to the project site in Eagle. Anchors and power conversion equipment were assembled, installed and deployed by mid June.

The turbine barge was deployed in the third week of June and operational commissioning of the turbine and generation equipment started. The majority of the testing has been successful however multiple operating issues were identified. These issues have been addressed and modifications are being implemented.

A rapid river rise from heavy rains upriver, at the end of June, brought down river large amounts of debris ranging from small twig size debris to large tree trunks. All debris has been problematic as it catches and collects on upstream surfaces of river equipment and infrastructure. The barge was damaged by large neutrally buoyant logs that bent the turbine mooring line spreader bar preventing turbine deployment into operating position. This necessitated beaching the turbine barge and demobilizing the installation crew until replacement parts are manufactured and delivered.

Environmental study plans were developed by AP&T, with participation from University of Alaska - Fairbanks (UAF) and BioSonics, and submitted to the agencies for review that defined the necessary fish monitoring to be performed. Agency response was favorable and contracts were written with BioSonics and UAF to perform research during 2010.

UAF will provide biologists to perform catchments and biophysical studies throughout the May to September 2010 operating season. In May, the research group mobilized into Eagle with equipment and a boat. The group scouted the river to identify sites that could successfully be used to deploy nets. Sites were identified in the project area and upstream and downstream from that location. A routine of daily sampling was established with activities occurring regularly on a 24 hour basis. Observed to date is a wide range of fish species and maturity. Nets will also be deployed from the stern of the turbine barge to study the physical effects of the turbine on fish passing through the turbine.

Bionomics was contracted to provide a dual scan sonar system to monitor and collect data in the region immediately upstream of the turbine. The data collected will be analyzed to determine the population and behavior of fish entering the monitored region.

In addition to the onsite studies, New Energy is participating in an Electric Power Research Institute (EPRI) organized evaluation of hydrokinetic turbines and their impact on fish. At the Conte labs, flume tests have been performed with a New Energy turbine similar to that deployed on the Yukon and the preliminary results indicate that the turbine has little impact on fish. A progress report released by EPRI is attached and a final report will be issued later this year with the formal results of this laboratory testing. AP&T is a sponsor of this research study.

Project existing or potential problems:

The equipment operating issues discovered in early commissioning have been addressed and modifications will be installed and tested in early August when the turbine barge is redeployed following the replacement of the spreader bar.

River debris is an ongoing problem and solutions are being studied to mitigate project impact.

Access to the project site is difficult at this time and will continue to be until the highway can be repaired. Alaska State Department of Transportation is responding to the situation but the highway remains closed at this time.

Activities Targeted for Next Reporting Period, Third Quarter 2010:

- Repair of turbine and redeployment in early August
- System upgrades to correct operating issues identified in early testing
- Continued operation of the turbine in the river through the middle of September.
- Removal and inspection of turbine equipment.
- Continued fish studies through turbine operating season including fish catchments from turbine barge.