AVTEC Hydro Training Facility

Grantees	Alaska Vocational Technical Center (Local Government)
Technology Type	HYDRO
Region	Railbelt
AEDG Project Code	10257

REF Grants Received

Round	App	Grant Title	Grant #	AEA Project #	Phase	Start Date	End Date	Status
4	657	AVTEC Hydro Training Facility	7040058	407078	Final Design	7/1/11	12/31/13	Closed

Grant 7040058: AVTEC Hydro Training Facility

Project Scope: The project is for permitting and design of repairs, refurbishment and upgrade of the City of Seward's Marathon Hydroelectric plant in Seward. The plant will be used by AVTEC as an education and training tool in support of AVTEC's Hydro Power Plant Operator training program. The intent is to return the plant to productive use and maximize the training benefits it can provide. Additionally, the power generated by the Marathon Hydro Plant will be supplied to the Seward Electrical Utility Grid and provide monetary value for the produced power.

The project was constructed in the early 1980's. It consists of a small spring-fed diversion, approximately 3,500 ft. of 12-14" steel penstock, a small powerhouse housing a single jet pelton turbine and a 250 kW generator. The project has not been operational since sometime in the 1990's. The plant has been used to support the training in a limited way, but due to the poor condition and outdated equipment, the hydro plant does not meet the standards for training.

The land and existing power plant are owned by the City of Seward. The City supports AVTEC's use of this project and is currently developing a Memorandum of Agreement authorizing AVTEC to maintain, operate and utilize the hydro plant for 50 years. AVTEC will be responsible for the design of improvements to the plant and to maintain and operate the Marathon Hydro facility as a training facility and for energy production. AVTEC will use revenue gained from selling the power to the City to offset the operating costs.

In summer 2010, AVTEC commissioned a condition assessment of the plant. The assessment reviewed the feasibility of using the plant as a training facility and identified the major components to be replaced in order to bring the plant back online. It found the mechanical equipment to appear to be in generally good condition for having sat unused for such an extended period of time. However, a more detailed analysis is needed to describe the features and costs of the plant upgrades/replacements and to prepare plans and specifications for items needing replacement or refurbishment. A review of existing permits will also be conducted to verify they meet current regulatory requirements for this hydroelectric facility and any new or amended permits will be obtained as needed under this scope of work.

Some of the major elements of plant refurbishment include:

1) Repair intake screens and level sensor at the intake structure
2) Inspect penstock
3) Inspect and repair turbine and shutoff valve
4) Test generator and speed increasing gear
5) Replace controls and switchgear
6) Clean powerhouse and paint piping
7) Remove unused water supply equipment and piping.

Upgrades planned include:

1) Replace existing electrical turbine control system with hydraulic system
2) Replace existing induction generator with synchronous generator and new voltage controls
3) Connect plant communications to AVTEC
4) Add resistive load bank to plant.

Project Status: AVTEC has cancelled the grant.