UAF 11-0017: NENANA, ALASKA HYDROKINETIC (RIVGEN™) POWER SYSTEM

Progress Report: FY 2010, 4rd Quarter
Submitted December 15, 2010

1. Total Project Funding

Denali Commission	$830,325
ORPC Alaska	$1,128,449

2. Updated schedule and milestone information as identified in the Project Work Plan.

AHERC submitted a modified proposal and Scope of Work to ORPC on December 9, 2010. The updated schedule and milestone information in the Project Work Plan follows:

Project Deliverables

Foundation Study Deliverables

1. Report on the literature of riverine foundations; December 30, 2010
2. Recommendations for Nenana RivGen™ foundation; January 3, 2011
3. Final report for foundation study including foundation system(s) that appear to be most viable at the NHTS as well as commentary on systems for the remainder of Alaska; December 30, 2011

Debris Study Deliverables

1. A report surveying existing trash rack technology and recommendations on how this technology might be applied to design a debris mitigation system for ORPC's demonstration RivGen™; February 2011.
2. A detailed design for a debris detection system integrated with the foundation system; April 2011.
3. Debris statistics for the Tanana River at Nenana in the river reach where ORPC's RivGen™ will be deployed. The statistics will be correlated with available data on current velocity, debris size and type, and river stage. December 31, 2011.
4. Final reports detailing methods, results and analysis of debris statistics; December 31, 2011.

TimeLine

Foundation Study Timeline

November 2010 - December 2010	Literature review of riverine foundations
July 2011 - October 2011	Review of construction and cost aspects of a riverine hydrokinetic turbine foundation
November 2011 - December 2011	Prepare final report

Debris Study Timeline

November 2010 - December 2010	Review literature and existing debris mitigation technology and engineering
December 2010 - January 2011	Provide results from literature review to ORPC about existing debris mitigation methods to help their design of a preliminary mitigation system. Provide preliminary concept designs for debris detection grate system

November 2010 - April 2011	Design methods and equipment to measure debris statistics in conjunction with the foundation design study
January 2011 - June 2011	Consult with ORPC on debris detection system during construction and installation
June 2011 - September 2011	Measure debris statistics data from the foundation grate system and other available instruments
October 2011 - December 2011	Analyze data from the measurement program and approach, and provide data to ORPC for their debris mitigation system design for their 2012 demonstration. Prepare and deliver final reports.

As data on debris was not collected by AHERC during the 2010 field season, ORPC is reevaluating if it is prudent to design and test a debris diversion system in advance of this data collection effort in 2011. If a schedule change for testing the debris diversion system is necessary OPRC will submit an updated schedule for this in the next quarterly report.

3. Narrative Summary

ORPC Alaska (ORPC) and Alaska Center for Energy and Power (ACEP) finalized the contract documents on October 5, 2010 and subsequently signed a modification with a change in the end date to February 15, 2012. The period of performance for the contract is August 17, 2010 through February 15, 2012. Paperwork with University of Alaska Fairbanks (UAF) has been completed for purchasing.

ORPC hosted a visit in Eastport, Maine on October 6-7, 2010 with Jerry Johnson and Jack Schmid from the Alaska Hydrokinetic Energy Research Center (AHERC) and NREL representatives to discuss the work that AHERC will perform on the RivGen™ foundation survey and the debris diversion work. We reviewed the progress to date and the work to be performed over the next year in Alaska. AHERC will re-scope their debris diversion study one last time prior to executing the contract with AHERC to make the efforts more relevant to the RivGen™ design and testing. In the meantime, UAF will set up an assumption account to begin work on the foundation study.

On November 10, 2010 ORPC and AHERC had the first monthly Nenana Project conference call to discuss project progress and the AHERC scope of work modifications under the Denali Commission EETG funding. ORPC and AHERC discussed how changes to the SOW could be incorporated into their current budget and timeline. It also became clear that AHERC would need more time to complete the final foundation study and that it would be important to prioritize deliverables to inform the prototype foundation design for the 2011 installation, and the debris detection system design that AHERC would complete for integration into this foundation.

Work got underway on design concepts for the RivGen™ debris deflection scheme and the RivGen™ generator design, which parallels ORPC's TidGen™ work at CPI. Some equipment has been ordered.

Initial loads specification for the RivGen™ foundation have been developed and communicated to AHERC for use in their foundation design effort. Subsequently, AHERC has developed some design concepts, which ORPC is reviewing.

TerraSond has delivered an initial interpretation of sub-bottom geophysical data for the Nenana site from the data collection effort in October; a final report is expected at the end of December 2010. TerraSond offered to provide time to verbally explain the data to clarify the interpretation. ORPC set up a teleconference with TerraSond on December 8; however AHERC was unable to attend. It is expected that AHERC will follow up with TerraSond directly to inform their interpretation.

ORPC and AHERC held a monthly call on December 1 to go over the project status. As agreed in the previous meeting ORPC had communicated load data, and TerraSond promised the geophysical sub-bottom interpretation by the COB in order for AHERC to have all of the information to complete their work for the December 30 and January 3 deliverable deadlines. ORPC and AHERC reviewed a preliminary foundation design and a preliminary debris detection design provided by Andrew Metzger. It was decided that a follow up with ORPC engineering to determine if the concept warranted further investigation would be cooridinated.

ORPC and AHERC held several calls the week of December 6 to further refine the AHERC SOW to reflect the discussions during the Eastport meeting and the monthly status call. A new SOW was delivered to ORPC on December 9. Pending a few minor changes this SOW should lead to an executed subcontract between ORPC and AHERC before the end of the year. In the meantime AHERC has set up an assumption account to allow them to move forward with their work.

4. Before and After pictures

None available at this time.

Total Project Expenditures for the Project as of the end of the Reporting Period

One expenditure has been made on this Project as of the end of the reporting period, December 15, 2010: $59,258 to TerraSond.

Modified Budget

ORPC may submit a modified budget if necessary after executing a subcontract with AHERC, but at this time we have no budget modifications.