



Alaska SeaLife Center®

w i n d o w s t o t h e s e a

**Alaska SeaLife Center Seawater Heat Pump Project
Denali Commission Emerging Energy Technology Grant
UAF 10-0069**

**Alaska Energy Authority Renewable Energy Grant
AEA Grant Agreement No. 7030017
Quarterly & Monthly Report ending September 30, 2011**

Key Activities Completed:

1. Completed partial system commissioning and training.
2. Heat pumps placed in operation in July 2011.

Existing or Potential Problems Addressed:

1. During commissioning it was discovered that the ModBus to LonWorks converter (Smart Server) supplied with the Motor Control Center (MCC) had not been programmed prior to installation in the MCC. The Smart Server has been removed and returned to the MCC supplier, Eaton. Eaton contracted with Echelon Corporation, the supplier of the Smart Server, to perform the programming which has been completed and returned and reinstalled in the MCC. Trane technician will be able onsite October 20th and 21st to complete the Tracer controller programming and screen programming which will allow for completion of commissioning the heat pump system.
2. The five electronic flow meters specified by the design engineers and supplied by SeaMetrics Corporation have proven unreliable in operation with the glycol and temperature ranges of the heat pump system loops. After extensive attempts to calibrate the electronic meters in consultation with the design engineers and SeaMetrics without success, a mechanical paddle wheel meter was tested in the evaporator loop and it is showing readings correlating with the design flows and pump pressure curves. The electronic meters are being replaced with mechanical paddle wheel meters that scheduled to ship from the supplier on October 26th.
3. Last month we reported a "power bump" caused from a weather related fault at the electric utility, was suspected in causing one of the two circuits in Heat Pump No. 1 to trip and not be able to be restarted. A Trane technician came

on-site and determined the fault was caused by low condenser oil which was corrected.

4. Installation of the pipe insulation is approximately 80% complete.

Activities Targeted for Completion:

1. Complete full system commissioning and training.
2. Complete pipe insulation installation.
3. Complete project exhibit design and construct/install exhibit.
4. Finalize project reporting and monitoring requirements with ACEP/AEA.

ASLC HEAT PUMP PROJECT TIMELINE

Updated October 1, 2011

June 6, 2010 – July 7, 2010: Procure and contract mechanical/electrical engineering services

July 8 – November 30, 2010: Complete design (Drawings, Specifications, Final Cost Estimate)

December 1 – January 31, 2011: Procure and control and electrical contractors.

December 1, 2010 – November 15, 2011: Equipment procurement (including instrumentation), installation and commissioning, and final reporting:

- a. Shop drawing/manufacture submittals and review – 3 weeks
- b. Manufacture and ship heat pumps, heat exchangers and instrumentation to Seward – 12 weeks
- c. Ship heat exchangers, heat pumps, instrumentation from Seattle to Anchorage to Seward – 2 weeks
- d. Installation of all mechanical, electrical and instrumentation components – 6 weeks, including piping and seawater supply pump
- e. Start-up, commissioning, and training

November 15, 2011 – June 30, 2012: Project monitoring and reporting to ACEP

EXHIBIT TIMELINE

April 1, 2011– November 1, 2011: Exhibit design

November 1, 2011 - November 30, 2011: Exhibit procurement & fabrication

December 1 – 30, 2011: Exhibit installation and evaluation

Project personnel assigned to the project are as follows:

Darryl Schaefermeyer, ASLC Operations Manager	Project Executive
Randy Stauffer, ASLC Project Engineer	Project Manager
John Underwood, ASLC Facilities and Life Support Supervisor	Project Superintendent
Douglas (Ricky) Deel, ASLC Exhibits Manager	Exhibit Development
Andy Baker, P.E., (www.yourcleanenergy.us)	Consulting Engineer
Lee Bolling, EIT, (www.yourcleanenergy.us)	Engineering Technician
John Faschan, P.E. (www.edc-alaska.com)	Electrical Engineer
Kevin Hansen, P.E. (www.edc-alaska.com)	Mechanical Engineer

The project is on schedule and budget to meet the Contract completion date of January 15, 2012.

Attachments: (1) Schedule & Milestone Overview as of 9/1/11
(2) Financial Report
(3) Photos

**Sea Water Heat Pump Project
Schedule & Milestone Overview
As of 10/1/11**

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|---|----------------------------|
| 1. Heat Pumps Ordered ⁽¹⁾ | Nov. 12, 2010 |
| 2. Complete System Engineering | Nov 30, 2010 |
| 3. Release System Component RFQs | Dec. 1 – Dec. 31, 2010 |
| 4. Place System Component Orders | Jan. 25 – Mar. 25, 2011 |
| 5. Receive System Components | Mar. 7 – May 6, 2011 |
| 6. Install Heat Pumps in Basement | Mar. 17 – 18, 2011 |
| 7. Install Piping in 2 nd Floor Gallery | April 4 - 7, 2011 |
| 8. Install Components & Piping in Basement | April 11 – June 6, 2011 |
| 9. Install Electrical Power & Control Wiring ⁽²⁾ | May 2 – June 8, 2011 |
| 10. Commission Heat Pump System ⁽³⁾ | June 27 – November 1, 2011 |
| 11. Complete System Training | Jun. 30 – November 1, 2011 |



Figure 1 Installing pipe insulation



Figure 2 Pipe insulation



Figure 3 Pipe insulation



Figure 4 Installing pipe insulation