QUARTERLY PROGRESS REPORT

PREPARED FOR THE ALASKA ENERGY AUTHORITY
BY
CHENA POWER COMPANY

PROJECT TITLE: Chena Power Geothermal Power Plant

COVERING PERIOD: January 1st through March 31st, 2006

DATE OF REPORT: April 23rd, 2006

GRANT RECIPIENT: Chena Power, LLC
P.O. Box 58740
Fairbanks, AK 99711

AWARD NAME: Alaska Energy Cost Reduction Solicitation

AWARD AMOUNT: $246,288

PROJECT PARTNERS: United Technologies Corporation
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PROJECT OBJECTIVE:

The objective of this project is to install a 400kW Organic Rankine Cycle (ORC) geothermal power plant at Chena Hot Springs, Alaska. This will be the first power plant operated off fluid from a geothermal resource in the State of Alaska, and will serve as a demonstration of the technology in this state. Additionally, the geothermal power plant will replace a 200kW diesel Caterpillar genset, displacing $241,812 of diesel fuel annually[1].

[1] Based on April 2006 fuel cost of $2.48 per gallon, and current rate of use. This number has been revised upward since 2003 by 150%.

EXECUTIVE SUMMARY

Work on the 400kW geothermal power plant to be installed by Chena Power Company has focused on five main areas during the last quarter. These include:

1. 1000 hour qualification test of the 1st unit at UTC in Hartford, CT
2. Erecting the new power plant building
3. Testing proposed injection wells and production wells
4. Designing layout for cold and hot water distribution systems
5. Moving pipeline and other equipment onsite

This report will provide an update on each of these areas of focus, organized as Part 1-5.

The project is proceeding on schedule, with installation of the first unit planned for June, 2006. According to the current installation schedule, power will be produced at Chena on June 15th, 2006. As previously reported, United Technologies Corporation (UTC), based in Hartford Connecticut, was selected as the manufacturer of the Chena Power system, using components from Carrier Refrigeration chillers. The power plant is being built as two 200kW ORC modules at the UTC Research Center in Hartford, CT. The first unit was completed in early 2006, and has been undergoing a 1000 hour qualification test period during this Quarter. Once all testing is completed, the unit will be disassembled and shipped to Chena Hot Springs in late May or early June, 2006. The second 200kW unit will be similarly assembled, tested, and installed before the end of 2006.

Qualification testing was completed with 99% availability of the unit. Performance testing has shown the unit will produced 230kW, which is 30kW more than design.

The project budget is on track from the previous Quarter, with a total project budget of $2,462,145. $13,135.54 was spent by Chena Hot Springs and Chena Power on the project during this report period, as a combination of in-kind and cash contributions.

PART 1: 1000 HOUR QUALIFICATION TEST

Assembly of the first the Chena Power geothermal power plant module was completed in January, 2006, one month ahead of schedule. Qualification testing began on February 16th, and 1000 hours of operation was reached on April 5th. The unit achieved 99.9% availability during the qualification testing. Additionally, performance testing showed that under Chena conditions, the unit will produce 230kW (30kW greater than design).

Once the Qualification Testing was completed, the unit was completely disassembled to look for any wear on components or internal problems. Upon inspection, high and low speed bearings and pump looked excellent. There was some impeller erosion observed, which has been attributed to a failed filter at the impeller inlet. A new filter will be installed which should eliminate this problem. **Attachment 1** includes a number of slides showing the result of the Qualification Testing. These include:

1. Timeline for Testing and Installation
2. Summary of the Qualification Testing
3. Graphs showing component startup, operation and shutdown
4. Power variation with change in high-side pressure
5. Power variation with change in low-side pressure
6. Turbine/generator performance
7. Turbine axial thrust
8. Bearing inspection upon teardown
9. Pump inspection upon teardown
10. Impeller erosion do to failed filter at nozzle inlet

Although no problem was observed with the shaft or bearings on the turbine for the Chena unit, a different operating turbine at UTRC did have a bearing failure during this Quarter. It appears to be due to motor cooling issues encountered early in the program, which resulted in excess refrigerant being pumped into the motor cavity. This resulted in a loss of oil on the low speed thrust bearing after shutdown. Subsequent startup removed babitt material from the low speed thrust bearing and caused the failure. This issue is being studied further, but has not been previously observed to have occurred in any UTRC/ Carrier unit.

The unit is being reassembled with the additional filter and will be operated for an additional ~500hours before shipping.

PART 2: POWER PLANT BUILDING

In preparation for installation of the first ORC unit, a new power plant building is being constructed. The building is a pre-manufactured steel building with two 3 ton overhead cranes – one for each ORC unit, and a separate control room. Large overhead garage doors will be installed to accommodate equipment needed for installation of the ORC units and possibly for future maintenance. The new building is adjacent to an existing maintenance equipment hanger and in close proximity to the current power plant, which will simplify hookup to existing electric infrastructure. The location of the power plant is shown on the aerial photo on page 8 of this report.

The external shell of the building has been erected, and work is beginning on the interior of the structure. Construction is expected to be completed by June 1st.

Figure 1. Internal View of Power Plant Building

PART 3: TESTING OF PROPOSED PRODUCTION AND INJECTION WELLS

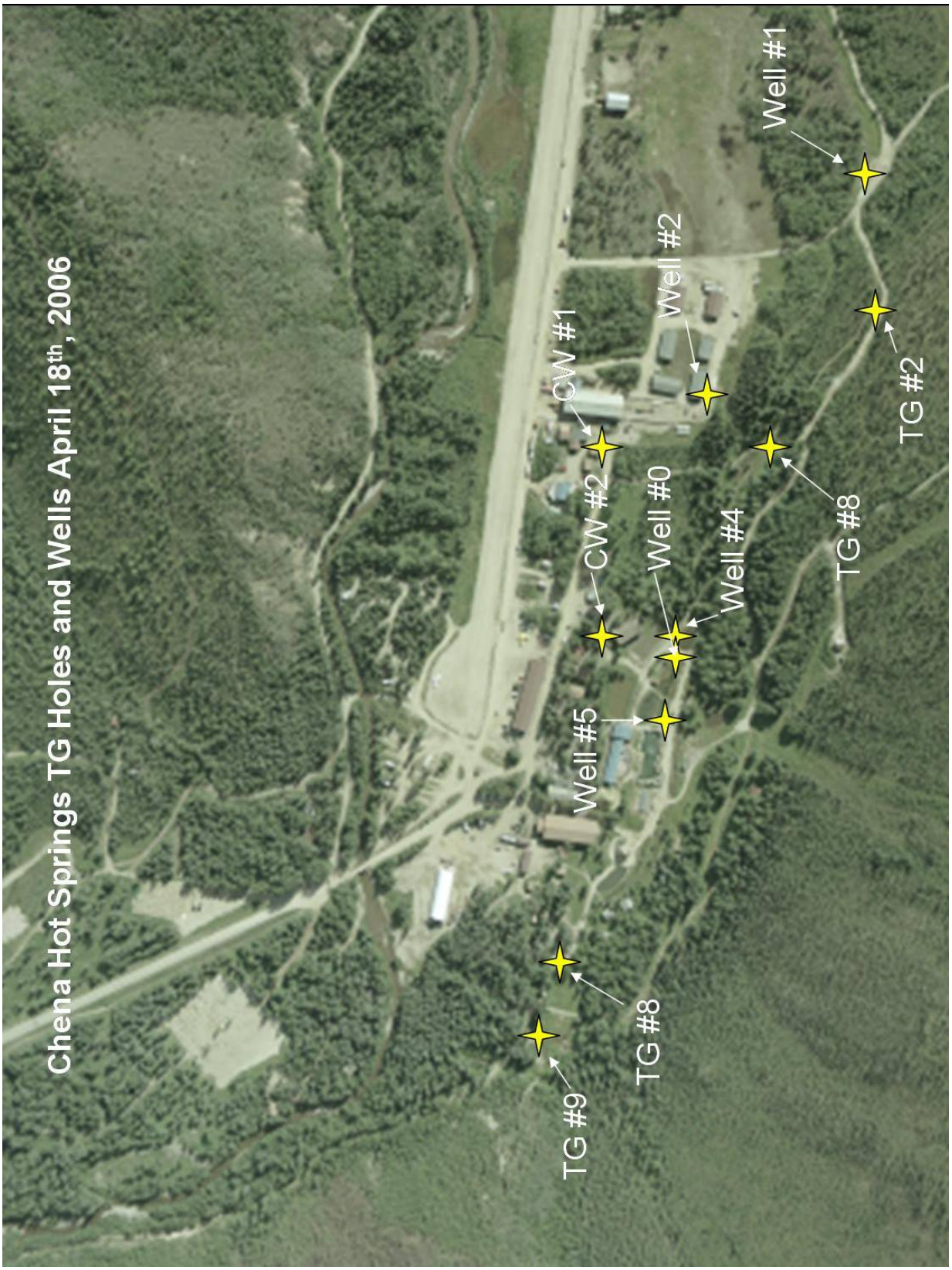
Production Wells

While the primary production well is still planned to be Well #6, a very promising new site was discovered during the first Quarter. An exploration hole, TG#9, was drilled to the far western edge of the field to a depth of 800ft. This well has shown potential for high flow rates from a 100ft zone between the depths of 450-550ft. Testing on the new hole during the first Quarter has shown that a 10in diameter production well located in close proximity drilled to a depth of 550ft could produce 1000gpm using a 40hp motor with an anticipated drawdown of 90ft. This well (Well #7) will be drilled during the second Quarter, and may become the primary production site. A map showing all TG Holes and Wells is included on the following page.

Injection Wells

Further testing has been completed on the proposed injection wells Well#1 and Well#2. These were chosen primarily because their distance from the proposed production area, and their pressure communication with the geothermal system. This ensures we are injecting back into the same reservoir. During injection testing of Well#1, an injectivity was calculated to be 25gal/ft. It is estimated approximately 400-500gpm could be injected into this well in its current configuration without pressurizing the wellhead.

Well #2 was deepened to a depth of 820ft in November, 2005. In December, an injection test was conducted and the injectivity was calculated to be 8gal/ft. In order to inject 500gpm, this wellhead will need to be pressurized to 25psi.


Chena Hot Springs TG Holes and Wells April 18th, 2006
Well #1
Well #2
CW #1
CW #2
Well #0
Well #4
Well #5
TG #2
TG #8
TG #9
TG #8

PART 4: DESIGNING LAYOUT FOR COLD AND HOT WATER DISTRIBUTION SYSTEMS

The distribution system for both the cold and hot water supply and discharge systems have been designed for maximum flexibility. The layout of the distribution system has been superimposed upon an aerial photo of the site on the following page. Some minor changes have been made since the last Quarterly report.

Hot Water Supply Layout

The hot water supply line for the power plant will extend approximately 2000ft from the TG#9 site (where Well#7 will be drilled), past the main production well site Well#6 before turning north and reaching the power plant site. A spur line will connect to Well#6 to the main line. All the known production zones are located within 200ft of the main line to allow maximum flexibility in production strategy. Fluid can be extracted from any or all well sites depending on long term reservoir reaction to the withdrawal of the fluid. Initially, water will be pumped from Well#6 and/or Well#7 using a 40hp submersible pump rated for the higher temperatures found in the Chena wells.

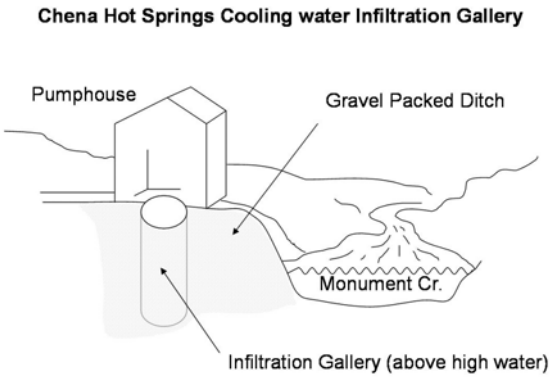
The pipeline will be constructed from insulated 8in HDPE pipe and will follow an existing road which follows the southern boundary of the property. The pipeline will be installed on supports 1ft above ground level. The pipeline will cross Spring Creek two times, and be attached to the supports of existing bridges.

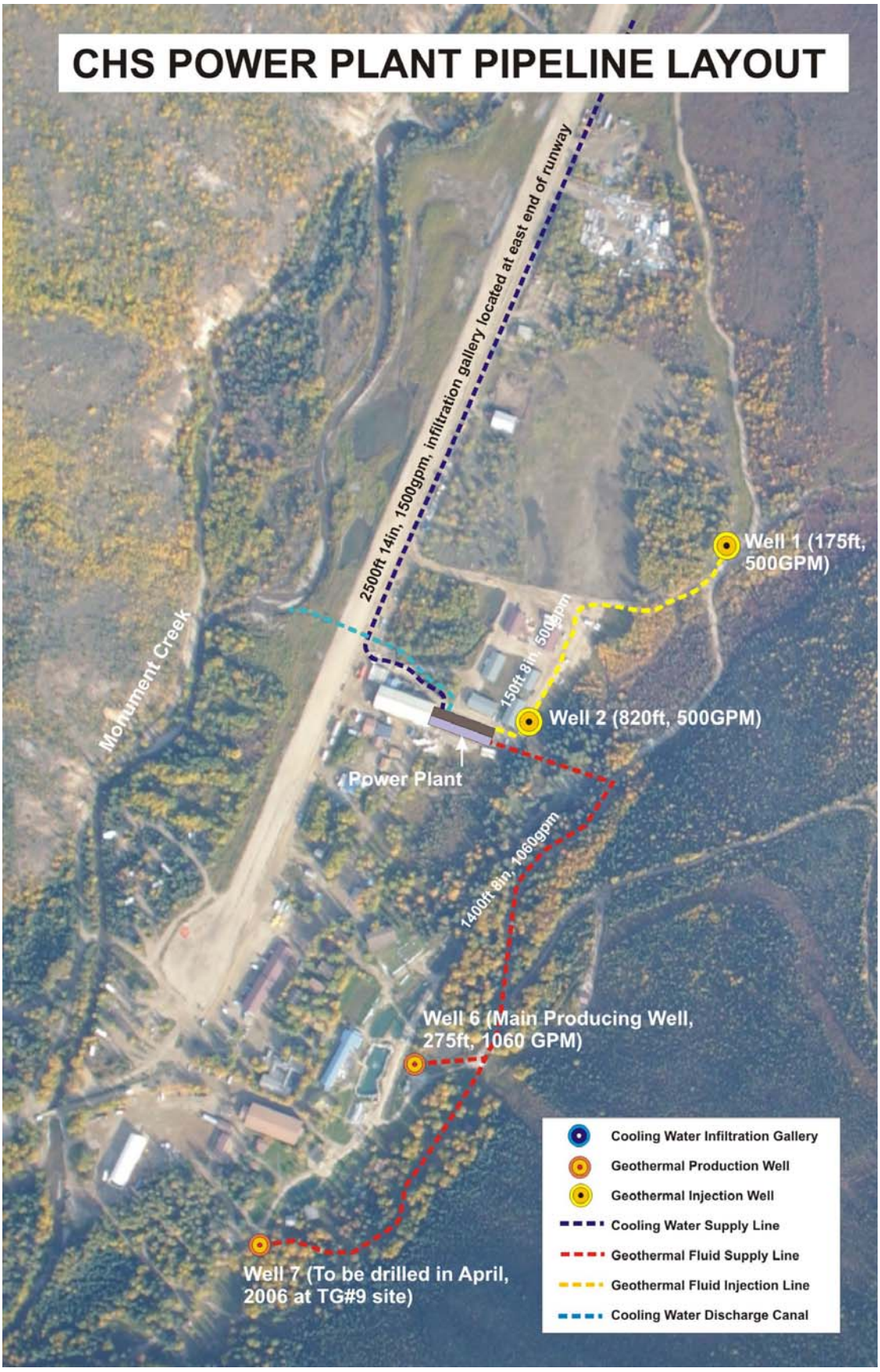
Hot Water Supply Layout

100% of the fluid extracted from the wells will be reinjected into the reservoir. The water will be injected into 2 wells at rates of 400-600gpm based upon testing discussed in Section 3 of this report. 8in HDPE will be used for the reinjection lines. 5-15hp pumps will be required to move the water to the wellheads from the power plant.

Cold Water Supply and Return Layout

The power plant will be water cooled, and as such will require 1500gpm per unit of ~40°F water. Cold water will be supplied from an infiltration gallery located just to the east of the runway. The water will be supplied via a 14in buried and insulated steel pipeline, which will be buried on the northern edge of the runway. Discharge to Monument Creek will be through an existing drainage ditch which runs underneath the runway through a 24in culvert.




CHS POWER PLANT PIPELINE LAYOUT
2500ft 14in, 1500gpm, infiltration gallery located at east end of runway
Well 1 (175ft, 500GPM)
Monument Creek
150ft 8in, 500gpm
Well 2 (820ft, 500GPM)
Power Plant
1400ft 8in, 1060gpm
Well 6 (Main Producing Well, 275ft, 1060 GPM)
Well 7 (To be drilled in April, 2006 at TG#9 site)
Cooling Water Infiltration Gallery
Geothermal Production Well
Geothermal Injection Well
Cooling Water Supply Line
Geothermal Fluid Supply Line
Geothermal Fluid Injection Line
Cooling Water Discharge Canal

PART 5: MOVING PIPELINE AND EQUIPMENT ONSITE

The pipeline and equipment needed to install it has been partially moved onsite during this Quarter. Work on laying out the line is expected to begin in May, once the ground has thawed.

8in insulated HDPE waiting for installation

PROJECT BUDGET AND TIMELINE

During the period from January 1st – March 31st covered by this report, $13,135.54 was spent on this project. $9568.00 was in-kind, and $3567.54 was in cash. The funds spent during this Quarter were primarily on well testing. Winter conditions did not allow for significant construction activities during this Quarter. The project budget and timeline previously submitted are still valid. No invoices have been submitted to AEA to date for this project, and none will be submitted with this report. Chena Power will begin submitting invoices during the next Quarter.