

DOE/PC/90544 - T5

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TECHNICAL PROGRESS REPORT  
HEALY CLEAN COAL PROJECT

DOE COOPERATIVE AGREEMENT  
DE-FC-22-91PC90544

QUARTERLY REPORT NO. 6  
FOR THE PERIOD  
APRIL - JUNE 1992

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ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY

Prepared by

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## **SECTION 1 - SUMMARY**

Please refer to Quarterly Technical Progress Report No. 1, January to June 1991 for the project background and objectives. This report covers April to June 1992 Phase I activities.

Budget period II commenced on May 21, 1992 with DOE's approval of the continuation application submitted in March 1992.

The Prevention of Significant Deterioration (PSD) permit and Air Quality control permit to operate was issued for agency review in April. The PSD permit was deemed technically complete by the Alaska Department of Environmental Conservation (ADEC).

Engineering and design continued on the boiler, combustion, flue gas desulfurization (FGD), and turbine/generator systems. Balance of plant equipment procurement specifications continue to be prepared.

1992 construction activities commenced as the access road construction got under way. Temporary ash pond construction and drilling of the supply well will be completed during next quarter.

Project management activities including contracting, financing, and DOE reporting continued.

**SECTION 2 - INTRODUCTION**

Please refer to quarterly Technical Progress Report No. 1, January to June, 1991.

### SECTION 3 - PROJECT STATUS

The following status is for Phase I work from April to June, 1992.

#### Project Management

The HCCP team participants and their primary roles include:

- Alaska Industrial Development and Export Authority (AIDEA) - Ownership, overall project management and financing.
- Golden Valley Electric Association, Inc. (GVEA) - Design input and review, operator and purchaser of the HCCP electrical output.
- Usibelli Coal Mine, Inc. (UCM) - Design input and review, coal supplier and ash disposal.
- TRW, Inc. (TRW) - Entrained combustion system technology supplier.
- Joy Technologies, Inc. (JOY) - Spray dryer, fabric filter and ash recycle system technology supplier.
- Stone & Webster Engineering Corporation (SWEC) - Architect/Engineer.

In addition Foster Wheeler Energy Corporation (FWEC) has been contracted for design, supply and erection of the boiler. Sumitomo Corporation of America (SCA) has been contracted for design, supply, and erection of the turbine/generator.

AIDEA's board of directors met during this reporting period.

The Alaska Public Utilities Commission (APUC) hearings were held the first part of July. Encouraging signs came from these hearings. A decision on the filing is expected in August.

The required monthly reporting under the terms of the Cooperative Agreement, Article XV, reporting requirements were fulfilled during this reporting period. The engineering and design schedule has been updated to reflect the agreed upon construction contracting plan and efforts to reduce cash flow in 1992 until encouraging signs are apparent in the permitting and NEPA areas. The construction schedule remains unchanged.

## Permitting/Nepa Compliance

### PSD Permit

The prevention of significant deterioration (PSD) permit was completed and issued for agency review. A complete PSD analysis was performed for all HCCP emission pollutants that are anticipated to exceed the significant emission rates of the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC). The air quality analysis consisted of demonstrating compliance with the National Ambient Air Quality Standards (NAAQS) and PSD increments through atmospheric dispersion modeling and evaluation of measured existing air quality data.

After submittal of the PSD, effort was placed on supplying the information and explanation necessary for ADEC to determine the PSD Permit Application to be technically complete as submitted by AIDEA and received by ADEC on April 27, 1992. A post-submittal technical completeness meeting was held in ADEC's Juneau office on May 19, 1992 to discuss the PSD Permit Application and to address any questions which ADEC may have had on the application. Following that meeting, additional telephone conferences and meetings were held with representatives from ADEC and the EPA to discuss and resolve questions relative to the PSD submittal. In a letter dated May 26, 1992, ADEC determined that the PSD Permit Application was technically complete effective the submittal date of April 27, 1992. Stone & Webster is continuing to coordinate interactions and conversations among representatives of ADEC, EPA, and the National Park Service (NPS) to expedite processing of the PSD Permit Application.

Following its determination as technically complete on April 27, 1992, ADEC has continued their preparation of a Technical Analysis Document (TAD) describing the project and preparation of a draft Permit to Operate. The TAD document and draft Permit to Operate will then be made available for public review and public meetings will be scheduled. The public meetings will probably be held in October 1992. Following the public meetings, ADEC will prepare a final Permit to Operate. The final PSD Permit, which is also a permit to construct, must be obtained by February 1993 in order to not adversely affect a spring 1993 construction start. Should legal or other issues adversely affect the timely acquisition of the PSD Permit, the construction start will be delayed and project costs affected accordingly.

### Visibility

A visibility analysis was also conducted as part of the air quality related values (AQRVs) evaluation of the HCCP. Visibility modeling and evaluations were conducted to provide an analysis of the potential effects of HCCP emissions on visibility in Denali

National Park and Preserve (DNPP). The presentation is included in the PSD Permit Application and includes three distinct analyses: plume visibility, ice crystal plume, and regional haze. An analysis was also presented on the visual effects of HCCP air emissions on an identified DNPP integral vista.

Following a request by ADEC personnel that AIDEA provide a training workshop on visibility, Stone & Webster has set up a technical visibility modeling workshop to be presented to ADEC, EPA, and NPS personnel in Juneau on August 19-20, 1992. The workshop will be preceded by a site visit to the Healy and DNPP area during August 17-18, 1992.

#### Preliminary Draft Environmental Impact Statement (PDEIS)

A significant effort was expended in the review of the PDEIS transmitted to AIDEA by DOE letter dated May 28, 1992, and in the preparation and compilation of Participant comments on the PDEIS. Comments were transmitted to DOE by AIDEA letter dated June 23, 1992. Subsequent to transmittal of the comments, Bill Steigers of Stone & Webster traveled to Pittsburgh during June 29-30, 1992 to assist DOE in the analysis of comments on the PDEIS received from reviewing agencies, and in the preparation of responses to those comments.

#### Environmental Monitoring Plan (EMP)

Preliminary planning for the Environmental Monitoring Plan (EMP) was initiated. Example EMPs from other projects and copies of materials outlining the content of an EMP were transmitted to Stone & Webster by DOE. The scope of the EMP was outlined and files were searched for appropriate input materials for the EMP. The level of work on the EMP will increase during July 1992.

#### Advantages and Disadvantages of a Separate or Single Facility PSD Permit for the HCCP

AIDEA began an investigation of the advantages and disadvantages of a separate or single facility permit for the HCCP. ADEC will be making a determination whether the HCCP should be considered as a separate facility from the existing Unit No. 1 unit, or whether the two units should be permitted as a single facility. The advantages/disadvantages of the separate/single facility permit issue were still under investigation at the end of the quarter. AIDEA will prepare a letter of recommendation in July 1992 to ADEC regarding the facility permit issue.

### Ash Pond

Environmental issues related to moving the ash pond to a new temporary location immediately south of the coal pile were addressed. ADEC has indicated that they would consider the temporary ash pond and an overflow pond between the Healy Spur Highway and the Suntrana Spur Railroad under a General Wastewater Disposal Permit if there would not be a surface discharge to the Nenana River. This permit would be issued with the understanding that the existing ash ponds would be removed and that the new pond would be used during construction of HCCP and only intermittently thereafter.

### Permit Applications

Follow-up contacts with agencies who are processing permit applications for the HCCP was continued. The Federal Aviation Administration (FAA) was contacted regarding the status of the determination of hazards to air navigation of the HCCP building and stack. FAA has issued the proposed project for public comment, and will make a determination whether the building and stack would present a hazard following the public comment period. The U.S. Army Corps of Engineers (Corps) and the Alaska Department of Natural Resources (ADNR) were also contacted to determine the status of Section 404 and water appropriation permit applications, respectively. Both the Corps and ADNR indicated that the permit applications were being actively processed.



## Engineering

### TRW Services:

Negotiations for the new Direct Coal Feed System (DCFS) were completed. The design, fabrication and installation of the Design Verification Test (DVT) DCFS hardware is proceeding.

The final DVT plan was completed and issued. The DVT precombustor hardware has been delivered to the Capistrano Test Site (CTS). The facility modification and buildup activities at the CTS cell 3 test facility are proceeding.

Cold flow testing on the coal feed system hardware configuration continued. The configured combustor has been installed. Characterization tests on the upstream splitters and cyclones designs are in process. The cyclones blowdown concept for transporting coal to the combustor were successfully demonstrated. The first draft of the combustor cold flow model report was completed and issued for review.

TRW and FWEC have worked together to simplify the combustor tube arrangement and to maximize the use of standard shop practices for the combustor fabrication in an effort to reduce costs.

The limestone feed system subcontract was awarded and preliminary engineering/design commenced.

### FWEC Services:

FWEC completed the pulverizer size reduction study and forced draft fan arrangement study. Review of the boiler design margins for determining the need of extra furnace height if actual furnace exit gas temperature is too high was completed. The results showed that the boiler does not need to be raised.

Flow model tests were completed with deflectors in the furnace hopper and various arrangements of NO<sub>x</sub> ports.

Definitive boiler general arrangement drawings and preliminary mill bay layout drawings were submitted for review. Final heat and material balances were submitted based on TRW final critical furnace design information.

Overfire air and burner spacing requirements for low NO<sub>x</sub> burner retrofit was completed. A budgetary estimate for low NO<sub>x</sub> burner retrofit was completed.

### Joy Services:

Joy awarded the ash conveying system and released the vendor to proceed with engineering. The agitators, atomizer motors, surge bin vent filter and recycle grit screen equipment have also been awarded.

Certified drawings for the loading diagrams, flow diagrams, SDA chamber, stair tower, baghouse and roof gas dispenser have been released. Preliminary logic diagrams, miscellaneous instrument drawings, bypass poppet valve details and tower mill drawings have been issued for review.

### SCA Services:

SCA continued engineering efforts on the turbine, turbine auxiliary and piping, generator, embedded materials, electrical equipment and instrumentation.

Drawings were submitted for instrumentation and electrical equipment, and revised turbine loading documents including seismic loads.

### SWEC Services:

SWEC continued preparation of preliminary P&ID's and system descriptions. Underground circulating water pipe drawings commenced. Piping drawings for the main steam, turbine area, boiler area and FGD areas continue to develop.

Concrete and steel drawings for the control building are essentially complete. Drawings for the turbine building, boiler and FGD areas continue to be prepared. Architectural drawings continue to be prepared.

The electrical station service study commenced and continues to be prepared. The main one-line diagram was completed and issued for participant review. Preliminary grounding grid layout commenced.

The Unit 1 bottom ash and coal handling studies were completed and engineering/design commenced in these areas. The temporary ash pond piping rework design was completed.

Bids were received for the Plant Control System (PCS) and evaluation commenced. AIDEA, GVEA, and SWEC toured existing facilities containing PCS's similar to the proposals received to aid in the evaluation.

The intake structure equipment letter of recommendation was issued to the participants for review.

The condenser and combustion air preheater procurement contracts were awarded and released for engineering.

Bids were received for the deaerator, feedwater heaters, turbine building bridge crane, lube oil conditioning equipment and induced draft fans. Evaluation of these proposals are continuing.

The circulating water, condensate and boiler feedwater pumps and oil/water separators equipment procurement contracts were issued for bids.

The bottom ash handling equipment, extraction non-return valves, fire pumps and air compressor specifications were issued for participant review.

#### SECTION 4 PLANS FOR NEXT QUARTER (JULY - SEPTEMBER 1992)

The following highlights activities planned for next quarter:

##### Environmental

- Continue required DOE reporting submittals.
- Continue administration of SWEC environmental subcontractors.
- Continue the Visibility Monitoring Program.
- Submit other HCCP permit applications as per attached schedule.
- Initiate work on the Environmental Monitoring Plan (EMP).
- Continue support and review of EIS documents.

##### TRW

- Issue the final Cold Flow Model Report
- Issue final P&ID's
- Issue final heat & material balance
- Continue cold flow testing on the coal feed system
- Continue design and buildup of the DVT and DCFS hardware

##### FWEC

- Finalize forced draft fan ductwork layout
- Continue furnace design
- Continue superheaters design
- Continue headers design
- Award coal feed system purchase order
- Continue major equipment procurement packages
- Issue updated definitive boiler general arrangements

##### Joy

- Execute contract change order no. 2

- Release certified electrical one-line drawings
- Release certified P&ID's
- Release certified general arrangements
- Issue equipment location drawings for review
- Issue instrument location drawings for review
- Issue motor location drawings for review

SCA

- Continue engineering efforts on the turbine, turbine auxiliary and piping, generator, embedded materials, electrical equipment and instrumentation

SWEC

- Issue electrical station service study
- Complete preliminary mechanical P&ID's and system descriptions
- Issue updated general arrangements
- Continue civil, architectural, concrete and steel drawings
- Award the following equipment procurement contracts:  
Turbine building bridge crane, lube oil conditioning equipment, induced draft fans, feedwater heaters, deaerator, plant control system.
- Issue the following equipment specifications for bid:  
Air compressors, fire pumps, bottom ash handling system, extraction non-return valves, coal handling and dust collection equipment, fly ash handling system, oil/water separators, power transformers, and construction camp.
- Issue the following equipment specifications for participant review:  
Makeup demineralizer, chemical feed system, plant waste water treatment equipment, civil contract and structural contract.
- Continue participant reviews as required.

**END**

**DATE  
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