SUBJECT: Report to U.S. Department of Energy
(formerly U.S. ERDA)

TITLE: Data Gathering in Support
Of Phase 0 Program For
Waste Heat Utilization From
Nuclear Enrichment Facilities
-OHIO-

MASTER

June 25, 1978

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SUBMITTED BY: Ohio Department of Energy
(formerly OERDA)

Robert S. Ryan
Director

REFERENCE: ET-78-C-01-2882

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Introduction

A proposal was made to the U.S. Department of Energy (then U.S. ERDA) on August 31, 1978, for the Ohio Department of Energy (then OERDA) to compile demographic and economic and community development data for the region impacted by the Piketon Nuclear Enrichment facility and provide statewide assistance to a then-to-be named contractor who would study uses for waste heat generated at the facility.

Although the majority of the statistical work was gathered early to support Bechtel, the prime contractor selected, activities supporting Bechtel's project took place over the October 1, 1977, to June 15, 1978, period. This report is intended as partial fulfillment of the Ohio grant. The lengthy statistical information furnished to Bechtel is not included herein.

Summary

1. The core effort of collecting and transmitting economic and community development data was completed by the Ohio Department of Economic and Community Development Department and transmitted to Bechtel.
2. The supportive functions of establishing a planning committee composed of State agency representatives and local planning personnel was completed. From this group, Bechtel had direct access to almost all of the state's resources that could effectively respond to the use application questions that emanated from Bechtel.
3. The Ohio Department of Energy provided direct inputs to specific use application ideas where knowledge and expertise was available.
4. A cooperative positive attitude in the community that could foster implementation was maintained, in our opinion.

Conclusions

1. The detailed, comprehensive and careful analysis that resulted in difficult questions to us beyond the statistical needs of the contractor,

Bechtel, lead us to conclude that the prime contractor, Bechtel, will provide the U.S. Department of Energy with an excellent Phase 0 report upon which to assess the opportunities in Ohio for effectively utilizing waste heat generated at Piketon.

2. Based on the response of the state and local agencies, it was concluded that the uses for waste heat in the Piketon area exist and that no unsolvable institutional barriers preclude commercialization. Of the three major areas of interest, technical feasibility, economic feasibility, and institutional feasibility, the weakest area appeared economic feasibility, in our opinion.

3. It was concluded that local people would respond to the possible proceeding to demonstration and commercial projects. Cooperation between the local people and the existing uranium enrichment facility appears good.

Discussion

1. This contract was supportive in nature to the prime study contract of the Bechtel Corporation. As such, our objective was to support their activities. Because of the time span of approximately ten months from inception to delivery of the final Bechtel report, it was necessary to deliver the demographic and community information in a timely fashion. This core information was collected by the Ohio Department of Economic and Community Development Department and transmitted to Bechtel. Appendix A contains a list of information provided.

Tasks performed included:

- a. The identification and categorization of the information to be obtained.
 - b. The identification of informational sources.
 - c. The establishment of geographic and temporal units.
 - d. The compiling and collection of information.
 - e. The report preparation.
 - f. Data clarification
2. Although reports can provide insight into a region, the discussion of

the past and present activities at Piketon with natives can be invaluable. By establishing the state and local committee, it is believed Bechtel was able to make these local and state contacts in an efficient way, thus yielding accurate and constructive practical information. Appendix B lists the names of the committee and their affiliation in Ohio. In some cases where a further interest was expressed by Bechtel, or by review sessions in Washington, meetings were arranged with many other people who could offer their suggestions and specific knowledge. For example, agriculture such as grain, and vegetables were investigated by broad and repeat visits to representatives of these industries.

3. Energy data and other information was supplied by the Ohio Department of Energy in direct response to questions. Specific areas of interest in Ohio's energy work was the production of alcohol from agricultural products and the drying of lumber. The reduction of gasoline and propane needs in Ohio would reduce the State's dependence on foreign oil. It is believed that one or more of these use areas will be among the best potential uses of the waste heat that Bechtel will determine.

The mechanism to distribute the hot water to potential users was an area of State interest. Discussions with people such as at the Ohio PUCO and the Piketon Water Company, indicated that the distribution of hot water more closely paralleled the distribution of cold water than the distribution of electricity or gas. The Pike Water Company, a cooperative, has been successful since its founding in 1970. Thus, a cooperative distribution system may be preferred to a private company. Other considerations tending to favor a cooperative system are the potential of lower cost right-of-ways, and lower interest financing.

The local community surrounding Piketon over the past 25 years has constructively lived with the uranium enrichment plant. Many young people have found employment in one or more phases of the plant's operations. Naturally,

any opportunity to build on this cooperative attitude is of interest. The region's population is small or rural and most things move slowly. Thus, the combination of a major expansion from a new enrichment facility combined with a potential change in the existing facility to utilize waste heat in the community have raised local questions that need explanation. After 25 years from the first enrichment plant the community is essentially stable, relative to what could result from the waste heat expansion alone.

The statistics and results of the multitudinous interviews by all parties will be recorded in the Bechtel National's final report. Yet, we feel it is worthwhile to reflect the sparkle or enthusiasm for some specific ideas that we obtained. A few are included below:

a. The people of Piketon are proud of their retirement community. Starting with abandoned housing, the Waverly retirement village is a local showplace and a contribution to the socioeconomic well-being of many in the community. Anything that utilizes these personal resources or that provides heated housing for retired personnel could be more successful overall than expected in other locations. The demonstrated success of this group at Piketon to positively innovate is established.

b. The Piketon technical college, focusing on practical application of technical training, is a resource that could make retrofit applications particularly economic relative to other areas. If an opportunity is presented where these local mechanical skills could be utilized, the program would have a better chance of success, in my opinion. Further, the skills developed in building a distribution system could build "people" an even more valuable resource than the waste water. It should be noted that the waste water projects will be outside the gates.

Time and Cost

The project was originally scheduled for a 26-week period from September,

1977, to February, 1978. The bulk of the activity, however, took place in the November, 1977, to May, 1978, period. We were delayed in starting and the time span was about a month longer. During this period there were organizational changes at both the U.S. DOE, the sponsor, and the Ohio DOE, the contractor, as both changed from ERDA. However, the working personnel continued in a timely fashion, although there was a necessary lag in the contractual arrangements.

A single voucher detailing costs of \$74,750 following contractual guidelines was prepared by the accounting section of the Ohio Department of Energy and accurately reflected the initial estimates.

APPENDIX A

C. Population, Income, Employment, Labor Cost, and Other Factors

From the U.S. Census, U.S. Department of Commerce, U.S. Department of Labor, the State Energy Office and DECD will extract the following primarily statistical information:

1. Population

1975

1970

% Change

Projected 1990

Projected 2000

Percent Urban 1970 (Census)

Percent Urban 1960 (Census)

Age 21-64, 1975%

Population Density

Population Characteristics

2. Income

Personal Income, 1975 (\$ Million)

Per Capita Personal Income, 1975 (\$)

Average Hourly Manufacturing Wage, 1975 (\$)

Average Weekly Manufacturing Wage, 1975 (\$)

Average Manufacturing Hours Worked, 1975 (\$)

Estimated Annual Defense Payroll, 1975 (Military and Civilian)
(\$ Million)

Average Hourly Agricultural Wage, 1975 (\$)

Average Weekly Agricultural Wage, 1975 (\$)

Average Agricultural Hours Worked, 1975 (\$)

Public Assistance Recipients, 1975

Unemployment Compensation, 1975

3. Employment: 1975 Annual Averages

Mining

Contract Construction

Transportation, Public Utilities

Wholesale, Retail Trade

Finance, Insurance, Real Estate

Services

Government

Manufacturing

Agriculture

4. Labor

Availability

Productivity

Fringe Benefit Plans

Union Memberships, 1975

Unemployment Rate, Average, December, 1975

Average Employer Unemployment Insurance Rate, 1975 (%)

Unemployment Insurance Benefits Paid, 1975 (\$ Millions)

Unemployment (Thousands), 1975

Total Labor Force, 1975

Labor Force Participation Rate, 1975 (%)

Labor Force Employed, 1975 (%)

Labor Force Projections, 1980

5. Manufacturing Employment and Wages

Number of Persons)
Average Hourly Wage (\$)) for 2-digit SIC categories

6. Construction

Construction Contracts, 1975 (\$ Millions)
New Industrial Plant Investments, 1975 (\$ Millions)
Number of New Industrial Plants
Number of Industrial Plant Expansions

7. Production

Electric Power Production, 1975
Million kWh, and Sources (i.e., Major Suppliers), Rates
Mining and Mineral Production, 1975 (\$ Million)
Value Added by Manufacturers, 1975 (\$ Million)

D. Financial Assistance, Tax Relief, Business Climate

1. State and Political Subdivision Financing

Is it permitted?
By General Obligation Bonds?
By Revenue Bonds?
Financing Agency?
Type (Development Credit Corp., Development Authority, Others)

2. Federal Financing

Type
Amount
Financing Agency

3. Other Financing

Money Center Banks

Local Banking Resources

Private Investors, Including Corporate

4. Taxes

Corporate

Real Estate

Income Taxes

Motor Fuels

Inventories

Etc.

5. Tax Incentives

Tax Exemptions or Moratorium on Land or Capital Improvement, Equipment and Machinery, Goods, in Transit, Manufacturers' Inventories, Sale/Use of New Equipment, Raw Materials for Manufacturer, and Exemptions to Encourage R&D.

State Right-to-Work Law, Minimum Wage Law, Fair Employment Practice Law, Uniform Statewide Property Tax Evaluation Law

Corporate, Personal and Excise Tax Exemptions

Changes in Federal Income Tax Laws?

6. Financial and Business Climate, Including Legal and Political Considerations

Vested Interest Groups or Individuals

Ordinances, Laws, Regulations that may restrict or hinder implementation of a project

Political Special Interest Groups

APPENDIX B

State Coordinating Committee Meeting
for the Bechtle Corporation/
U.S. Department of Energy
Study of the Feasibility
of Waste Heat Recovery
at the Portsmouth
Gaseous Diffusion Plant

November 1 1977
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