GL004207

CENTRAL COOLING AND HEATING FACILITY

FEASIBILITY STUDY

1.0 SCOPE AND OBJECTIVE

1.1 Scope

This Statement of Work delineates tasks required to determine expected output capacities of the MX operating base Central Cooling/Heating Facility. Once heating and cooling capacities have been established the feasibility of including capability for cogeneration of electricity shall be evaluated. The study includes data gathering, analysis, optimization, and recommendations for candidate base sites which are currently being considered for the MX Program. Coal shall be the primary fuel in all cases.

1.2 Objective

The overall objective of the tasks pursuant to this Statement of Work is to provide Air Force with sufficient data to fully define facility requirements. Specific objectives include the following:

A. Define heating and cooling requirements and systems to be served from the central facility.

B. Determine economic feasibility of incorporating cogeneration with the CCHF through life cycle costing of alternatives.

C. Develop capacities and load generating characteristics.

D. Identify charactertistics of coal, coal storage and handling systems, associated environmental control equipment, daily and annual consumption rates and supply volumes.

E. Develop order of magnitude cost estimates for CCHF based on mid point of construction.

F. Develop typical siting, access, storage and security requirements in relationship to current base conceptual arrangements.

G. Consider fire protection and safety requirements.

H. Coordinate with AFRCE-MX to develop pollution abatement requirements, air monitoring and permits required and agencies involved to determine project time lines. Identify proposed types of equipment to meet environmental requirements.

I. Consider methods for disposal of by-products for defining costs.

J. Identify long lead items and determine potential impact on construction schedule.

2.0 GENERAL BACKGROUND

2.1 General

An operating base will be developed to support deployment of the MX missile system. A coal-fueled Central Cooling and Heating Facility (CCHF) is an element of the MX facility complex. Because several alternative base sites are under consideration and because a base master plan has not yet been accomplished, this study is required to determine CCHF output capacities based on evaluation of available information for each site. Where thermal energy is required for heating, it is frequently advantageous to obtain heat in conjunction with the turbine used in generation of electrical power. The overall efficiency of the combined system provides a substantial improvement in consumption of energy compared with either system considered separately. The potential savings in energy must be compared with the additional costs incurred in providing the dual capability.

2.2 Program Management

The Ballistic Missile Office (BMO) under Air Force Systems Command (AFSC) is responsible for program management.

3.0 ARCHITECT-ENGINEER TASKS

3.1 Data Gathering

The initial phase of the study will determine delivered costs for coal and electric power. Based on the list of facilities (attached), DAA Site Plans (SMX-41940) and general base layouts, seasonal profiles for plant heating and cooling loads will be developed by identifying the facilities to be served from the central plant and quantifying their individual loads. Electrical loads are required to establish the output capacity for the turbine-generator to supplement or completely replace purchased commercial electric power.

3.2 Analysis

3.2.1 Determine the life cycle costs for delivering heating and cooling service through a generalized distribution network covering the DAA, CSA, OB and living areas. In this analysis, each facility will be evaluated by comparing life cycle cost for service from the central coal-fueled plant with the alternative of installing individual independent equipment at the facility. Consideration will also be given to the possibility of providing regional substations to distribute heating water and chilled water to groups of buildings. Impact of using RDF (refuse derived fuel) and sewage sludge to supplement the primary coal at the central plant and the benefits, if any, will also be considered.

3.2.2 Determine by using the heating and cooling demands as a basis, the life cycle costs for alternative designs to provide capability to meet part or all of the electrical demands for the base. Optimization of the

electrical generating capacity will involve consideration of daily, weekly and seasonal load variations, cost of purchased power when heating demands are too low to warrant operation at full capacity, and value of surplus power to be sold when heating demands are high.

3.2.3 Based on discussion with AFRCE-MX/DEV, representative mitigation measures shall be identified for inclusion in the facility cost estimate. Identify agencies having jurisdiction, abatement requirements to be met, monitoring provisions, and proposed types of equipment to be installed.

3.2.4 Indicate special features to be considered during design such as siting requirements, provisions for access to various areas, methods for handling and transfer of materials such as coal and ash, storage requirements and supply volumes for fuel based on daily and annual consumption rates, and provisions to be made for security, safety, and fire protection.

3.2.5 Outline methods for disposal of by-products including ash, blowdown water, waste sludge, and non-combustible material produced in preparation of RDF.

3.2.6 Long lead items will be identified and the potential impact on construction schedule and date of startup will be determined.

3.2.7 Order of magnitude costs for CCHF based on mid point of construction will be determined for use in preparation of life cycle costs.

3.3 Study Report

3.3.1 A Technical Operating Report (TRO) will be prepared and include the following:

1. Introduction
2. Summary and Conclusions
3. General Design Criteria/Requirements
4. Detailed Scope of Work
5. Specific Requirements for the Final Report will include: Preliminary performance requireemtns, mass and energy balances; flow diagrams; facility layouts; and process descriptions.
6. Cost Analysis
7. General Construction Schedule
8. Long Lead Items
9. Work will begin on Coyote Springs with options to perform the study on Beryl, Milford and Clovis.

4.0 SCHEDULE

4.1 Progress Briefing

As soon as preliminary conclusions are developed, but not later than 8 weeks following NTP, a briefing will be presented to indicate progress of the study and establish a baseline for the final study report.

4.2 Final Report

The final report shall be submitted not later than 13 weeks following NTP.