FE-2570-18
Distribution Category UC-90c

COAL GASIFICATION PROJECT
DOUGLAS SITE
PIKE COUNTY, KENTUCKY

QUARTERLY REPORT

PERIOD AUGUST-OCTOBER 1978

RONALD A. HOLLINGER

PIKE COUNTY, KENTUCKY
in conjunction with
MASON & HANGER—SILAS MASON CO., INC.

DATE PUBLISHED - DECEMBER 1978

Prepared for
DEPARTMENT OF ENERGY
OFFICE OF ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY
DIVISION OF COAL CONVERSION
Washington, D.C. 20545

Under Cooperative Agreement No. EF-77-A-01-2570
April 1977

ABSTRACT

Cooperative Agreement No. EF-77-A-01-2570 between Pike County, Kentucky and ERDA (DOE), which was signed in April, 1977, established a project to construct and cooperatively manage a low Btu coal gasification system, called an Energy Plant, in an environmentally acceptable manner at the Douglas Site located in Pike County, Kentucky. This Energy Plant is to supply hot and chilled water, for heating and cooling, to a multi-use community composed of residences, a health care facility and commercial buildings, and is to provide a test situation from which a data base may be developed to furnish technical, cost, and operational data for the future use of low Btu coal gasification facilities.

In addition to the above, it is intended to sell the gas produced over and above that required to satisfy the heating and cooling demand load to future industries to be located in the Douglas Site.

Mason & Hanger-Silas Mason Co., Inc., of Lexington, Kentucky, has been retained by Pike County, Kentucky to design the Energy Plant and to provide the necessary construction management services during the construction phase.

The original concept of the Project, as set forth in the Cooperative Agreement, calls for the work to be accomplished in three phases:

Phase I - Design, Phase II - Construction, and Phase III - Operation. As previously stated, the responsibility for Phases I and the management of Phase II rests with Mason & Hanger-Silas Mason Co., Inc.

SUMMARY OF PROGRESS TO DATE

The attached chart, labeled "Project Plan and Progress Report", indicates the progress to date and also indicates the "slippage" or planned schedule extension of certain items of work occasioned by delays in obtaining information for the preparation of the Final Design bid package. During this reporting period there has been some substantial progress made due to the fact that the Foundation and Floor Slab bid package was issued for bids. Bids were received, a contractor was selected and a contract was awarded. Construction was commenced on the foundation and floor slab during the first quarter of October. The work on the foundation and floor slab is progressing quite well due to unseasonably warm weather. The commencing of construction is a very positive milestone for this project.

There have been some further delays encountered due to the unavailability of hot and chilled water requirements for facilities in Douglas Park that are to be supplied from the Energy Plant. These requirements are presently impacting the project to the point that this data is necessary to complete the Final Design bid package.

The gas producers will be ready for delivery prior to the building foundation and floor slab being ready for gas producer installation. An investigation, into the most desirable and/or economical method of handling the gas producer delivery and/or storage, is being conducted.

All of the hereinbefore listed delays to Final Design have resulted in extensions to the schedule for all of the activities which necessarily follow these efforts.

DETAILED DESCRIPTION OF TECHNICAL PROGRESS

As a result of the maximum current anticipated heating and cooling loads being somewhat less than the design loads as used for calculations in the original Concept Design, the manufacturer of the boilers is performing a series of calculations to determine the operating characteristics of the boilers under varying load conditions and with various fuels.

An investigation into the possibility of locating a single source manufacturer/supplier with the expertise to supply a complete raw producer gas clean up system is being conducted. This system is to reduce SO_2, tars and oils in the raw producer gas to acceptable Environmental Protection Agency (EPA) levels. It appears that there is no one source which has a complete state-of-the-art ability. One of the companies contacted is willing to bid a complete system and they seem to be the best qualified of those contacted. This company seems to be reasonably capable of supplying the entire raw producer gas clean up system.

As a result of the elimination of the capability of future coal firing of the boilers, the amount of ash produced has been reduced. Therefore, the ash handling system was redesigned so as to eliminate the costly automated ash handling system. Plans are to use a much less expensive mechanical ash handling system.

The coal handling system has required some redesigning due to the fact that the latest gas producer operating manual indicates the mandatory use of two fuels, one for start-up and another for steady state operation. There must be a start-up fuel which is used for an eight hour period and then changed over to the steady state fuel for continued operation. This requirement made it necessary to add a start-up fuel hopper and feed system, to the coal handling system. This has impacted the project to the point of delaying the issuing of the Coal Handling Equipment bid package for review and approval.

It has come to light, that during the review the Department of Energy, Environmental group did not check the requirements for NO_x stack emissions. The resulting impact of incorporating the requirement for NO_x emission control will undoubtedly delay further the preparation of the Final Design bid package.

The problem of carcinogenic incineration has been resolved for the present time. The carcinogenic incineration is only mandatory in Phase II operation due to the fact that the concentration of carcinogenic materials only occurs when tars and oils from the gas cleanup system are burned in the boilers.

For carcinogenic incineration the boilers can be retrofitted, as necessary, for Phase II operation. The dropping of the mandatory carcinogenic incineration requirement will help in reducing the delays in getting data from the vendors necessary for completion of the Final Design bid package. Phase I operation consists of a production of producer gas and its use to fire the boilers. Phase II operation is planned to be the production of producer gas, processing the gas through a cleanup system to remove tars, oils and sulfur and firing the boilers with this "clean gas"and/or selling the "clean gas" to various industries proposed to be on site.

The delays encountered in obtaining data pertinent to the final design is impacting the project to the point of delaying the preparation of the final design bid package.

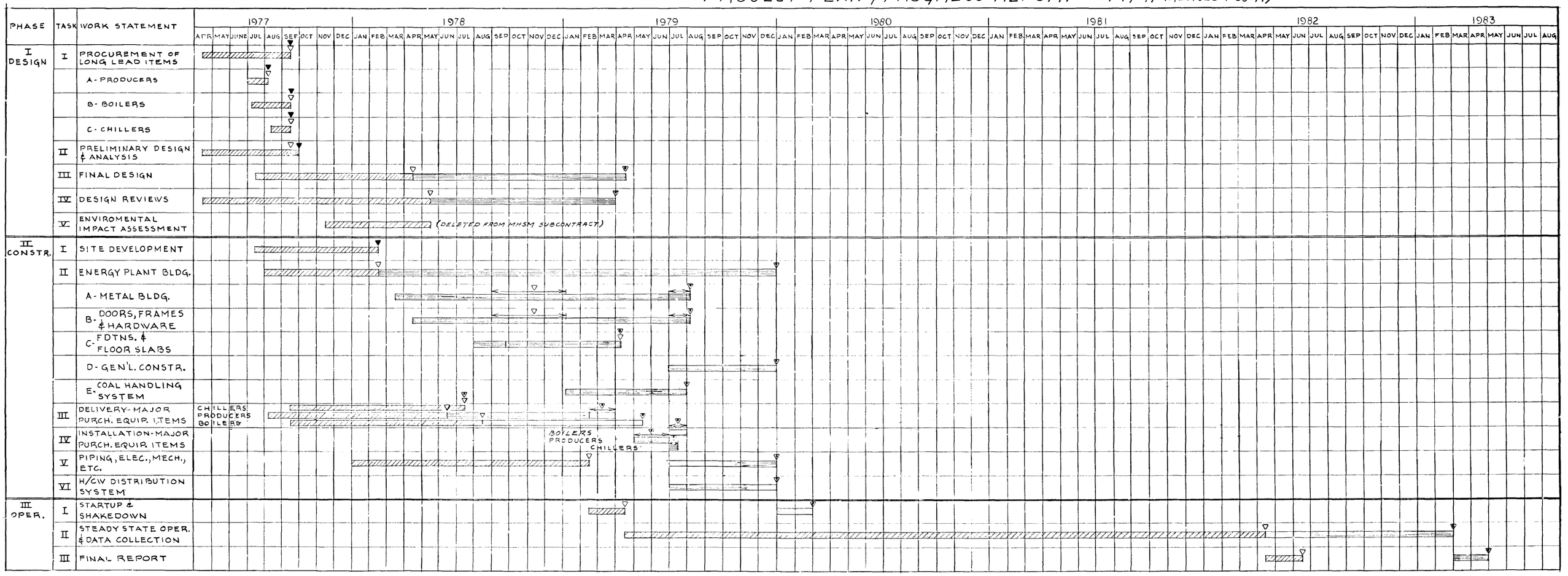
A study is under way to determine the feasibility of running hot and chilled water to the Health Care Facility. This study has brought up the question of where the utility corridor should be placed. As originally planned the utility corridor would be located on the west side of Douglas Parkway and the excavation for this location is complete. There is the possibility that the east side of Douglas Parkway would be a more desirable location because the location of the tie-ins to the utility system will be simplified. The sanitary sewer was not located in the utility corridor on the west side of Douglas Parkway as originally planned. This is impacting the project to the point that the hot and chilled water distribution system will not be able to be bid as part of the Final Design bid package, but will be bid as a separate package.

The gas producers have poke holes that require a cover which uses an inert gas for purging to prevent gasifier gas leaks. Manufacturers are currently being investigated to see if their poke hole cover designs adequately provide operator protection from gas leaks and are an acceptable item.

In summary, there may seem to be many changes being incorporated at a point in time which could impact the project. These changes are being brought about by uncontrollable factors. These uncontrollable factors have made it necessary to review and/or make changes in some areas. These review or changes are being considered as to the most desirable and economical systems to be incorporated.

In the succeeding quarter, it is planned to continue the ongoing investigations into all areas and to proceed to expedite as much as possible the completion of the Final Design bid package. In this period is also included the issuance of the bid package for Coal Handling Equipment and the receiving of bids for same.

PROJECT PLAN & PROGRESS REPORT 1-19-79 (REVISED 1-23-79)



▨ - ORIGINALLY SCHEDULED TIME FRAME

▬ - ACTUAL OR PLANNED TIME FRAME

▽ - ORIGINAL SCHEDULE - DELIVERY OR COMPLETION

▽ - REVISED SCHEDULE - DELIVERY OR COMPLETION

▼ - ACTUAL - DELIVERY OR COMPLETION

☆GOVERNMENT PRINTING OFFICE: 1979-640-258-1363