

Section 1

INTRODUCTION

The development of a viable synthetic liquid fuels industry requires an understanding of the economic as well as the technical differences between major coal liquefaction processes. The objective of this study was to develop a consistent set of evaluations of two major coal liquefaction processes. These evaluations could then be used by the industry as technical and financial guidelines for selecting the most promising approach and for rating new developments and alternative processes.

The coal liquefaction processes selected by EPRI for this study were:

- H-Coal (a direct liquefaction process)
- Coal-to-Methanol (an indirect liquefaction process)

This study develops the cost of manufacturing distillate fuel products by the H-Coal process from both eastern bituminous coal (Illinois No. 6) and western subbituminous coal (Wyodak). Naphtha and turbine fuel, as direct products of liquefaction, are hydrotreated, and naphtha reforming facilities are included in the H-Coal design to insure that product quality and processing costs are accounted for. Finally, the cost of producing methanol from Illinois No. 6 coal is developed and compared with the cost of distillate fuel products.

The study consists of three cases:

- Case HE - H-Coal Illinois
- Case HW - H-Coal Wyodak
- Case CM - Coal-to-Methanol (Illinois No. 6 coal)

Technical information for the development of process designs was made available from the licensors or was developed from Stone & Webster's in-house information and designs. Sections 5, 6, and 7 of this report present the process designs for the three cases studied. The designs are for commercial size, self contained plants consuming only coal, air, water, catalyst, and chemicals. Each plant is designed for a nominal liquid production rate of 50,000 bbl/sd* fuel oil equivalent (5.85 x 10⁶ Btu/FOE bbl).

Capital and production cost estimates are presented in Section 8. An EPRI discounted cash flow (DCF) computer model was used to calculate selling prices for fuels for a nonregulated producer and for a regulated utility producer. Several sensitivity cases and financing methods are examined to assess their effect on product price.

*The term stream day (sd) represents one full operating day. The term stream factor is equivalent to the annual capacity factor.