

LMFS-99-30
ALTERNATIVE LIGNITE EXTRACTION TECHNOLOGIES

CONTRACTOR: Dakota Gasification Company

PRINCIPAL INVESTIGATOR: Al Lukes
Phone: (701) 221-4400
Fax: (701) 221-4450
Email: alukes@bepc.com

CONTRACT AMOUNT: \$30,000

Project Schedule – 8 Months

Contract Date – 6/30/99
Start Date – 7/1/99
Completion Date – 4/01/00

Project Deliverables

First Status Report – 12/03/99✓
Draft Final Report – 3/17/00✓
Final Report – 4/01/00✓

OBJECTIVE / STATEMENT OF WORK

The purpose of this project is to evaluate alternative and advanced technologies for the potential to meet the environmental and competitive challenges in the new century and thereby enhance the production and use of lignite. The Phase I approach was to evaluate a series of concepts and select a limited number for further evaluation.

STATUS

During Phase I underground coal gasification and lignite upgrading were identified as two alternative technologies warranting further study. Barr Engineering (Barr) and Dakota Gasification Company (DGC) expended additional time, effort and funds during Phase II exploring alternative technology options. Barr and DGC worked with input from Hazen Research Inc. to complete the following Phase II activities: 1) evaluation of UCG applied to ND lignite, 2) evaluation of lignite upgrading, and 3) efforts to scope technologies that may warrant further study.

UCG

Underground coal gasification has enough different aspects that the potential for innovation to reduce cost and make it environmentally safe is great. Recent technologies in hydrogeological investigations, groundwater modeling, horizontal drilling, and cleanup of coal gasification facilities are a few of the new technologies that may be applicable for further development of underground coal gasification.

Lignite Upgrading

No *new* demonstrated technology for upgrading lignite was found.

Technologies warranting further study

A concept called LANL, zero-emission coal-to-hydrogen, is in development. The LANL concept, which attempts to incorporate carbon sequestration and power generation, may have application in the future for lignite.

Innovation is occurring in coal-bed-methane (CBM) recovery technologies. CBM recovery may not fall directly under the charge of the lignite research, development and marketing program. However, CBM may provide an opportunity for accessing an untapped resource in North Dakota and provide a source for additional economic growth for the energy sector and the State of North Dakota.