

DEVELOPMENTS IN PEAT BIOGASIFICATION. M.G. Buivid, D.L. Wise, Dynatech R/D Co., Cambridge, MA 02139, A.M. Rader, Minnesota Gas Co., Minneapolis, MN 55426, M.J. Kopstein, U.S. Dept. of Energy, Washington, DC 20545.

A four-phase development program is underway to confirm that biogasification is a technical and economical process for the conversion of peat into pipeline quality methane (SNG). The biogasification of peat is based on a two-stage process. In the first processing stage (assumed to follow hydro-mining) an oxidative pretreatment of peat breaks down the ligno-cellulosic structure to soluble, low molecular weight acids, wood sugars, and other soluble organic fragments. Unreacted peat solids are separated while the recovered liquid, containing the soluble organic material is converted to methane and carbon dioxide by conventional anaerobic fermentation in the second stage of the process. Phase I was a preliminary experimental investigation which indicated that a substantial percentage of the energy value in the solubilized peat from the first stage was fermented to methane in the second stage. Phase II was a preliminary process design and economic analysis that showed a 75 billion BTU/day peat biogasification plant to be cost competitive with other sources of natural gas. Presented are the details of the 8-month Phase I and II study. Phase III, which started October 1979, co-funded by Minnesota Gas and the U.S. Dept. of Energy, will optimize a continuous multistage bench scale biogasification process (18-month program). The objective is to provide scale-up data necessary for a process development unit (PDU) of approximately 1 ton/day (Phase IV). A significant advantage of the biogasification process appears to be that technical difficulties of dewatering necessary for peat utilization in conventional gasification or direct combustion, are eliminated.