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Issued on: February 24, 2005

New Coal Cleaning System to Recover Fine Coal from West Virginia Pond System Turns "Waste" Into Useable Fuel

Pittsburgh, PA — The first commercial use of an advanced coal-cleaning system comprising two advanced separation technologies will take place this summer when it is used to produce clean, upgraded coal from a large fine-coal waste pond located in southern West Virginia. Developed with support from the Department of Energy, the innovative system will create useable fuel from discarded "waste" and could be used to clean up the hundreds of potentially deadly coal-waste "impoundments"—waste ponds behind earthen dams—that dot the Appalachian mountains.

The innovative separation system will be installed near Pineville, W.Va., at property owned by Pinnacle Mining Company. It uses two processes: One produces clean coal by separating impurities like clays, silica, and pyrite from waste coal, and the other separates water from the cleaned coal. Virginia Polytechnic Institute and State University, Beard Technologies, Inc., and the Energy Department's National Energy Technology Laboratory (NETL) developed the two-step separation system under NETL's Solid Fuels and Feedstocks Program, which aims to reduce the high cost of processing fine coal.

Separating impurities from coal will be achieved using the Microcel™ flotation column, which was developed and patented in the mid-1980s by Virginia Tech. The process uses tiny air bubbles to recover coal fines—microscopic coal particles—that are too small to be recovered with conventional methods. The clean coal product from the column will then be pumped to vacuum filters to remove water. Novel dewatering aids developed at Virginia Tech and licensed to Nalco, a large chemicals company, are added to the coal to facilitate the dewatering process. The result is a clean, low-moisture fuel that can be used for combustion. Beard Technologies plans to use the advanced separation system to produce 240,000 tons per year of clean coal from the waste coal in the impoundment.

"Availability of an advanced fine coal dewatering technology is a major step forward in recovering coal fines from impoundments," said Edgar Klunder, project manager in NETL's Gasification and Combustion Projects Division. "Utilities burning coal for electricity generation are not interested in coal fines containing excessive moisture. Typically, fine coal is 25–30 percent moisture by weight; with the dewatering aids, moisture can be reduced to 15–18 percent, depending on the particle size of the coal recovered."

"There are other ways to dewater coal—thermal drying, for example—but they are too costly to install and operate for small-scale operations like pond recovery," Klunder noted. "A less-costly, yet efficient dewatering method is the key to recovering coal from impoundments."

If Beard Technologies is successful in recovering fine coal using the advanced separation system, many other companies could follow suit. The Energy Department estimates that 30–50 million tons of coal fines are discarded annually into impoundments because of the high cost of processing fine coal. This adds to the more than 2 billion tons of coal already in about 700 fine coal impoundments, most of which are located in central Appalachia.

This brings to the forefront a concern that coal impoundments dotted along the Eastern United States represent.

Many large coal impoundments are situated near residential areas, and peoples' lives are at stake

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should the coal impoundment collapse or overflow. Just 4 years ago, fine coal sludge burst from such an impoundment near Inez, Ky., pouring into two tributaries of the Big Sandy River situated between Kentucky and West Virginia. While no one was killed, the impoundment flooded stream banks to a depth of 5 feet, and local water supplies were interrupted for days. It cost \$46.5 million to clean the mess.

A much more serious accident occurred in 1972 when a dam at the Pittston's Buffalo Creek impoundment in West Virginia collapsed, killing 118 residents in a matter of minutes, injuring 1,100 and leaving more than 4,000 homeless.

Microcel™ is being used worldwide as a stand-alone technology to upgrade fine coal and to produce mineral concentrates. Developing an economically viable advanced dewatering technology will certainly increase its use. Two major equipment manufacturers—Metzo Minerals and Eriez—are marketing Microcel™ to the minerals and coal industries. The new dewatering aids are being marketed by Nalco.

- End of *Techline* -

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Page owner: Fossil Energy Office of Communications

Page updated on: December 14, 2005



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