

Finding of No Significant Impact
MORGANTOWN ENERGY TECHNOLOGY CENTER
FUNDAMENTAL FLUIDIZATION RESEARCH PROJECT

AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The DOE has prepared an Environmental Assessment (DOE/EA-0575) that analyzes the potential environmental impacts for the design, construction, and operation of a 2-foot diameter, 50-foot high, pressurized fluidized-bed unit in an existing research building at the DOE's Morgantown Energy Technology Center (METC) in Morgantown, West Virginia. Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969. Therefore, the preparation of an Environmental Impact Statement is not required and the Department is issuing this FONSI.

COPIES OF THE EA ARE AVAILABLE FROM:

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BACKGROUND: METC proposes to conduct fundamental research on fluidization technology by designing, constructing, and operating a 2-foot diameter, 50-foot high, pressurized fluidized-bed unit. The anticipated result of the proposed project would be a better understanding of fluidization phenomena under pressurized and high velocity conditions. This improved understanding would provide a sound basis for design and scale-up of pressurized circulating fluidized-bed combustion (PCFBC) processes for fossil energy applications.

DESCRIPTION OF PROPOSED ACTION: The 2-foot diameter, 50-foot high, pressurized fluidized-bed unit would be an open-loop system, designed to suspend inert particles using warm air. The unit would operate under ambient or elevated temperature and pressure. Atmospheric air would be compressed to 75 pounds-per-square inch gauge (psig) and heated to 750 degrees Fahrenheit. The maximum air flow rate would be 16,000 actual cubic feet-per-minute. The air would be fed to the bottom of the fluidization vessel, where it would contact and suspend inert particles injected pneumatically by a separate air stream into the vessel. Limestone, sand, or plastic chips would be used as the inert particles. At the top of the vessel, four cyclone separators would collect and return carry-over particles to the bottom of the vessel. The warm air exiting the vessel would flow through a spray water cooler before entering a baghouse where fine particles would be removed. The air heaters would be fired with

natural gas, and the exhaust flue gas would be discharged to the atmosphere. The 2-foot diameter, 50-foot high, pressurized fluidized-bed unit would be constructed in an existing research building at METC. The test program would investigate the effects of bed temperature (i.e., ambient to 750 degrees Fahrenheit), bed pressure (i.e., 20 to 75 psig), static bed height (i.e., 1 to 12 feet), and various physical properties of the solid materials, such as particle shape, size, density, and size distribution. The unit would operate approximately 36 hours-per-week (1,872 hours-per-year) for the first year and proposed plans are for similar operations during the following several years.

ENVIRONMENTAL IMPACTS: The environmental effects associated with the design, construction, and operation of a 2-foot diameter, 50-foot high, pressurized fluidized bed unit at METC, have been reviewed and found to be insignificant. This project would have little or no impact on air quality, water quality/quantity, solid waste management, noise levels, floodplains, wetlands, historic areas, ecological resources, or socioeconomic factors. About 2 million pounds-per-year of carbon dioxide would be emitted from natural gas-fired heaters with no release of sulfur dioxide or sulfuric acid mist expected from the project. The total particle emission would be about 1,030 pounds-per-year. All required permits would be obtained prior to operation of the project. No solid waste would be generated by the project, as the solid bed materials (i.e., limestone, plastic, or sand) would be

recirculated back to the unit in order to maintain the constant bed inventory. About 4.4 million gallons-per-year of water would be used for indirect cooling, and would be discharged to the atmosphere as steam. No increase in noise at the METC site boundaries would be anticipated from the project. Sound level measurements would be performed during operations, and proper signs and personal protection equipment (PPE) would be used in accordance with approved procedures. Because the project would be conducted within an existing research building, there would be no significant impact to floodplains, wetlands, historic areas, and ecological resources.

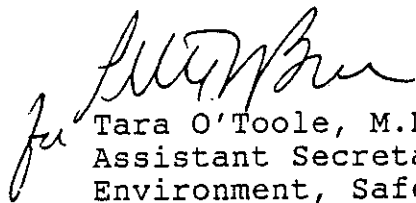
ALTERNATIVES CONSIDERED: Alternatives to the proposed action were considered in the EA. Under the No Action Alternative, DOE would not proceed with the proposed project, and the proposal is not otherwise expected to be implemented. Therefore, the impacts described in the EA as a consequence of the proposed action would not occur. However, a no-action alternative would fail to provide necessary data for design and scaleup of PCFBC processes. A no-action alternative would delay or abort any technology transfer to industry, and any subsequent industrial plans to demonstrate PCFBC technology. Alternative sites for conducting the proposed research were considered and dismissed because implementation would be cost prohibitive. The unique expertise of the METC researchers and the availability of METC facilities were key factors in determining that the proposed Fundamental

Fluidization Research Project should be sited at METC. Alternative technologies to PCFBC include fixed-bed, bubbling-bed, and entrained-bed processes. Each of the alternative technologies is already undergoing development by METC and/or its contractors.

PUBLIC AVAILABILITY: Copies of the EA and the FONSI will be distributed to all persons and agencies known to be interested in or affected by the proposed action or alternatives, including appropriate agencies within the State of West Virginia. Additional copies of the EA and FONSI are available on request from the DOE directly and from the Morgantown Energy Technology Center at the address given above.

DETERMINATION: Based on the analysis provided in the EA, DOE determines that this proposed action, Fundamental Fluidization Research Project, is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act, 42 U.S.C. 4321 et seq. Therefore, an Environmental Impact Statement is not required and DOE is issuing this FONSI.

ISSUED IN WASHINGTON, D.C. ON February 10, 1994

for 
Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety and Health