AIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIM STANDARDS
BY APPLIED IMAGE, INC.

1 of 1

DE-AC02-93AC75928

DS11

DOE/ER/75928-1

MISSISSIPPI DOE EPSCoR
PLANNING GRANT

Final Report

W. G. Steele

Mississippi State University
Mississippi State, MS 39762

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

August 1994

Prepared for

THE U.S. DEPARTMENT OF ENERGY
AGREEMENT NO. DE-FG02-93ER75928

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

MISSISSIPPI DOE EPSCoR PLANNING GRANT FINAL REPORT

ABSTRACT

The Mississippi DOE EPSCoR planning grant committee identified three focus areas for a proposal submitted on February 2, 1994 to the U.S. DOE: Human Resource Development, Characterizing and Minimizing Fossil Fuel Effluents, and Energy Efficient Heat Transfer Equipment and Materials. In the human resources area, efforts were undertaken to identify and develop linkages with educational institutions, national laboratories, and industries and to identify strategies for attracting and involving students in areas leading to technical careers. The fossil fuel effluent project was directed toward beneficiating coals, measuring efficiencies of the various beneficiation methods, measuring the flue gas components both before and after beneficiations, and modeling the production of soot and of NO_x and SO_x . In the energy efficient heat transfer area, analytical and experimental investigations were planned to increase the efficiency of heat exchangers and insulating materials.

INTRODUCTION

The DOE planning grant funding to the State of Mississippi for the preparation of a proposal for the Experimental Program to Stimulate Competitive Research (EPSCoR) has provided the opportunity for the development of a statewide, coordinated approach toward energy research and human resource development. Mississippi's four largest institutions of higher learning, Mississippi State University (MSU), Jackson State University (JSU), the University of Mississippi (UM), and the

University of Southern Mississippi (USM), are working together to identify research expertise and potentially competitive research areas. They are also working to develop the infrastructure for greater cooperation among the faculty from all universities in the state and for increased participation of students in energy related projects.

The EPSCoR activities are managed by the Mississippi Research Consortium (MRC). The chief research officers of the four participating universities constitute both the Board of the Consortium and the EPSCoR Executive Committee. The planning committee for the DOE EPSCoR proposal is composed of Dr. Glenn Steele (MSU), proposal coordinator, Dr. George Adebiyi, human resources director, and the following representative from the four MRC universities: Drs. Robert Cook and Robert Taylor (MSU), Drs. Raz Pandey and David Wertz (USM), Drs. Jeffrey Roux and Peter Sukanek (UM), and Drs. Xijian Liu and Jerzy Leszczynski (JSU). The organizational structure of the Mississippi DOE EPSCoR program is given in Figure 1.

PLANNING COMMITTEE ACTIVITIES

The calendar of activities of the Mississippi DOE EPSCoR planning committee is given in Figure 2.

The research clusters proposed for the Mississippi DOE/EPSCoR Program were the result of a two-year review and selection process. In 1991, Mississippi

Figure 1. MISSISSIPPI DOE/EPSCOR ORGANIZATION

Figure 2. Calendar of activities of the Mississippi DOE EPSCoR Planning Committee for the 1993-1994 Project Year

August 1993	Proposal revision started
September- November	Planning grant committee coordinating meetings
December	First draft of revised proposal completed
January 1994	Final draft of revised proposal completed
February	Completed proposal submitted to DOE
August	Proposal revision started

received a planning grant from the DOE to initiate the EPSCoR program. Through an extensive process of proposal solicitation and review followed by interaction with the interested faculty, the Planning Grant Committee developed a proposal for the first round of DOE/EPSCoR competition. The Mississippi DOE/EPSCoR Committee benefited significantly from the review comments received on the proposal submitted. These comments were used to refine the two strongest clusters into research programs that had the potential to become nationally competitive. These two clusters each had participants from the four state comprehensive universities and combined the talents and expertise of scientists, mathematicians, and engineers.

Each cluster chose Advisory Committee representatives from industrial and national laboratories to provide guidance in the proposal preparation. Each cluster's technical proposal was submitted to the appropriate advisory committee members for advice and comments. These comments were incorporated into the final version of the proposal.

Summaries of the proposed research clusters are given below:

(1) Energy Efficient Heat Transfer Equipment and Materials

This cluster is composed of two research projects in energy engineering research and materials science. One project is concerned with thermal and fluid dynamics research related to heat exchanger technology. Primary reasons for choosing this emphasis area were faculty expertise and the strong relationship with Heatcraft, Inc. of Grenada, MS. Heatcraft is the nation's largest independent manufacturer of plate-fin and tube heat exchangers. The second project, which deals

with the study of heat transfer in fibrous insulations and relates to the DOE mission to reduce winter heat loss and summer heat gain, also builds on strengths in faculty expertise.

(2) Characterizing and Minimizing Fossil Fuel Effluents

The two research projects in this cluster will combine the expertise of physicists, chemists, biologists, and chemical engineers to reduce and measure the environmentally harmful effluents from fossil fuel combustion. One project will concentrate on modeling the reactions in parallel with experimental efforts to characterize the species produced during the combustion of various types of fossil fuels and mixtures. The other project will investigate methods to clean fossil fuels using either membranes or microbial beneficiation.

The human resources development portion of the Mississippi DOE/EPSCoR program addressed the state's objective of strengthening the scientific community by adding to and working with other established programs to expand the human resource pool which is involved in energy-related research and education. Several initiatives are already in place in Mississippi to increase the pipeline for careers in science and engineering, and the DOE/EPSCoR human resources program would mesh with and complement these programs to increase the numbers of under represented minorities, women, and disabled individuals in energy-related science, engineering, and mathematics research and education.

Mississippi is in a unique position to have a significant impact on the numbers of African Americans involved in energy-related activities. The majority of the

human resources funds for DOE/EPSCoR were used to incorporate into the research cluster activities in the summer teachers and students from the Mississippi public school system and junior faculty and students from the state's HBCU's. During the academic year there would be followup activities between the human resources individuals and the research cluster PI's including visits by the PI's to the schools and HBCU campuses. These efforts when combined with interactions with other state initiatives and with the junior faculty, undergraduate student, and graduate student development funded directly in the research clusters would comprise the complete human resources development program. The primary objective was to reach and have an impact on as many individuals as possible.

CONCLUSION

The Mississippi Research Consortium, the planning grant committee, and the research area leaders prepared a proposal to the U.S. DOE for the EPSCoR program. The research focus areas were identified and budgets were prepared for the projected work in each area. The proposal was submitted to the U.S. DOE on February 2, 1994. On July 26, 1994, the Mississippi group was informed that their proposal was not funded but that a bridging grant was to be awarded. The remaining funds from U.S. DOE Agreement No. DE-FG02-93ER75928 were used to assist in the revision of the DOE EPSCoR proposal for resubmission in 1995.

DATE

FILMED

10/13/94

END