DOE/ER/75424--T1

FINAL PERFORMANCE REPORT

Grant Number: DE-FG05-88ER75424

Project Title:"Technology Transfer: Developing Dual-Degree Programs with Major Universities in Three Energy-Related Careers"

Background and Introduction

Fort Valley State University (FVSU) is an 1890 Land Grant Institution and is a member of the University System of Georgia which has 34 units. FVSU is fully accredited by the Southern Association of Colleges and Secondary Schools and the National Council for Accreditation of Teacher Education. By the ethnicity of its student body population, FVSU is categorized as one of the nation's Historically Black Colleges and Universities (HBCU). Academically, its operates from three colleges, the College of Arts and Sciences, the College of Agriculture, Consumer Sciences, and Allied Programs, and the College of Education which includes the Graduate Division and Special Programs. FVSU has a current student enrollment above 3,100 students.

In 1983, FVSU received start-up funds from the U. S. Department of Energy's Office of Minority Economic Impact to develop a Cooperative Developmental Energy Program (CDEP). The objective of CDEP is to develop a mutually beneficial long-term synergistic relationship among FVSU, two major universities, and the private and governmental sectors of the nation's energy industry by creating a technology oriented labor base for minorities and women. FVSU accomplishes this objective by (1) developing dual-degree curricula with the University of Oklahoma and the University of Nevada at Las Vegas in energy related disciplines such as

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engineering, geosciences, and health physics ; (2) by recruiting academically talented minority and female students to pursue careers in the above disciplines; and (3) by developing participatory alliances with major energy companies and governmental agencies via internship, co-op, and employment programs.

Justification

The insufficient number of scientists and engineers being trained to meet the United States' projected needs has been widely discussed. Caucasian males have historically dominated the scientific work force in America. Today, according to a study by the National Science Foundation, fewer and fewer Caucasian males are selecting to enter the fields of science and mathematics which are usually prerequisites for engineering, geosciences, and health physics. If the nation is going to produce the necessary quantity of scientists and engineers , it must make up the deficit with individuals from under-represented groups such as minorities and women. The recruiting of more minorities and women into the technical workforce is no longer a moral and/or social issue, but it is necessary if the United States is to remain competitive.

The funds from this grant were used to recruit academically talented minority and female students to: (1) pursue professional careers within the energy industry; and (2) pursue dual-degree majors in energy-related disciplines such as engineering, geosciences, and health physics.

Results

Recruitment. From 1984 to 1991, only Fort Valley State University students were recruited into the CDEP program. During that period, the criteria for students participating in CDEP consisted of: (1) students had to possess a 3.0 or above GPA on a 4.0 scale; and (2)

students primarily pursuing majors in science, mathematics, or accounting. In the Fall of 1991, FVSU implemented dual-degrees in engineering, geosciences, and health physics. Since 1991, students were recruited primarily from the Southeast and Western United States. In order for students to receive scholarship consideration, they had to have a high school graduating grade point average no less than a "B" and SAT scores of 1100 or above (or corresponding ACT score of 26 or above).

Dual-Degrees. Fort Valley State University and the University of Nevada at Las Vegas (UNLV) offer dual-degrees in mathematics and the following disciplines: Electrical Engineering, Mechanical Engineering, Environmental Engineering, Civil Engineering, and Health Physics. Fort Valley State University and the University of Oklahoma (OU) offer dual-degrees in Mathematics/Geophysics and Chemistry/Geology. Participating students spend the first three years at FVSU and then transfer to UNLV or OU for years four and five.

Students participating in these dual-degree programs earned B. S. Degrees in Mathematics or Chemistry at FVSU, B. S. Degrees in Engineering or Health Physics from UNLV, or B. S. Degrees in Geology or Geophysics from OU.

Performance and Assessment. Sixty-two students are currently enrolled on five year dual-degree scholarships. Forty-nine of these students are enrolled in FVSU/UNLV dual-degree engineering or Health Physics programs. Twenty-five are majoring in Mathematics/Electrical Engineering, ten in Mathematics/Civil Engineering, two in Mathematics/Environmental Engineering, five in Mathematics/Mechanical Engineering, and seven in Mathematics/Health Physics. Thirteen students are enrolled in the FVSU/OU dual-degree geoscience programs. Two students are majoring Mathematics/Geophysics, five in Mathematics/Geology, and six in

Chemistry Geology.

Five students have completed the FVSU/UNLV Mathematics/Engineering dual-degree program and are employed. Fourteen students are expected to graduate with dual degrees in Mathematics/Engineering in May of 1998 followed by thirteen in May of 1999.

Three students have graduated from the FVSU/OU dual-degree program. One of these students has also completed the M. S. Degree in Geophysics from Stanford University and is employed in the oil and gas industry. A second graduate is pursuing the M.S. Degree in Geology. The third graduate is working for an environmental company. Four more students are scheduled to graduate in May of 1998 from this dual-degree program followed by four more in May of 1999.

Internship and Co-op Assignments. Approximately 90% of the students in the dual-degrees programs participate in internships or co-op assignments with participating energy companies and governmental agencies.

CDEP Impact on Students. Since its inception in 1983, CDEP has provided over 650 energy internships for FVSU students, they have gained over 250,000 hours of hands-on work experience, and earned over $3 million to help finance their education. Approximately, 900 students have been in the CDEP program. Over 30 have found employment in the energy industry and approximately 35 have gone on to earn Master's or Ph. D. degrees.

Energy-Related Field trips. Students were taken on energy-related field trips to visit various energy producing sources. They visited coal mines, electric-producing wind-mills, geothermal power plants, hydro-electric power plants, nuclear power plants, oil refineries and oil producing fields.