

PROJECT TITLE: Matching Grant Program for University Nuclear Engineering--MNE #5-34065

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RECIPIENT ORGANIZATION: Kansas State University, Office of Research and Sponsored Programs, Fairchild Hall, Room 2, Manhattan, KS 66506-1103

DOE AWARD NUMBER: DE-FG02-99NE38165

UNEXPENDED FUNDS: \$0.00

Introduction

The DOE Matching Grant (DE-FG02-99NE38165) was awarded to augment the funds awarded to Kansas State University (KSU) by Westinghouse Electric Co. (WEC) to enhance the KSU Nuclear Engineering program. The Department of Mechanical and Nuclear Engineering at Kansas State University (KSU) and Westinghouse Electric Co. (WEC) of Pittsburgh, PA. agreed to a program that was designed to provide educational opportunities to students of Nuclear Engineering and to train engineers for careers in the nuclear industry. The Westinghouse internship program, as it was called, provided funding and access to Westinghouse proprietary design codes for graduate and undergraduate studies on topics of current industrial importance. This gave students the opportunity to use some of the most advanced nuclear design tools in the industry and work on actual design problems.

Summary

The DOE Matching Grant was used to support undergraduate and graduate educational activities in Nuclear Engineering. In the Fall 1999 semester, the grant provided (partial) support for an undergraduate Senior Design team, which used the WCOBRA/TRAC code supplied by Westinghouse to simulate a series of small break loss-of-coolant-accident (LOCA) experiments performed at Oak Ridge National Laboratory. A final report entitled "Simulation of Two-Phase Heat Transfer Experiments Using WCOBRA/TRAC and Evaluation of Code Performance," documenting the simulations and comparison to data was supplied to Westinghouse. Of the four students on the design team, one decided to pursue graduate studies in Nuclear Engineering.

In the Spring 2000 semester, the grant supported a team of four undergraduate Nuclear Engineering students. These students developed a WCOBRA/TRAC input model for a Combustion

DOE Patent Clearance Granted

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10-30-02

Date

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Engineering System 80+ PWR, and simulated a large break LOCA. From this design team, one of the senior decided to attend graduate school in at Kansas State and used this senior design project as a starting point for his M. S. thesis. The DOE Matching Grant provided partial funding for this M.S. student in the Summer of 2000. This student (J. Pottorf) later completed his M.S. thesis and published the paper entitled, "Large Break LOCA Safety Injection Sensitivity for a CE/AB System 80+ PWR," at the International Conference on Nuclear Engineering (ICONE-11).

In the Spring 2000 semester and during the summer of 2000, the grant partially supported the studies of Mr. William Deng who used the WCOBRA/TRAC code to simulate an integral test facility. Mr. Deng later successfully completed his M. S. thesis entitled, "Simulation of BETHSY 6.2TC 6-Inch Cold Leg Side Break Test Using WCOBRA/TRAC."

The DOE Matching Grant Program also made it possible to obtain the TRAC-M code from the Nuclear Regulatory Commission, and to make some improvements to the Nuclear Thermal-Hydraulic Laboratory.

Conclusion

The DOE Matching Grant was used successfully to enhance Nuclear Engineering studies at Kansas State University. The funding was used to help retain a current graduate student, and helped to attract and support an additional graduate student who otherwise may not have stayed in the Nuclear Engineering program. The success of the program resulted in additional funding from Westinghouse and continuation of the analysis program.