

UNIVERSITY OF CALIFORNIA

LOS ANGELES

Internship Experience in the Field of
Air Pollution Consulting

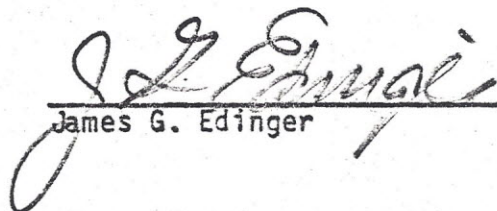
A final report submitted in partial satisfaction of the
requirement for the degree
Doctor of Environmental Science and Engineering


by


Chung Shing Liu

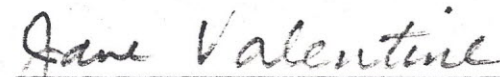
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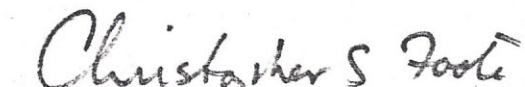
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VITA

July 13, 1950--Born, Hualien, Taiwan

1972--B.S., Fu Jen University, Taiwan

1972-1974--Military Service

1974-1976--M.S., University of California, Los Angeles

1976-1977--Scaife Research Fellow

1977-1978--Environmental Scientist, Flow Resources Corporation

1979-Present--Staff Scientist, Systems Applications, Incorporated

ABSTRACT OF THE FINAL REPORT

Internship Experience in the Field of
Air Pollution Consulting

by

Chung Shing Liu

Doctor of Environmental Science and Engineering

University of California, Los Angeles, 1980

Professor Christopher S. Foote, Chairman

The report details the working experiences of my internship conducted at three different air pollution consulting firms to fulfill the academic requirements for the degree of Doctor of Environmental Science and Engineering. The descriptions of the major environmental projects involved are given. A brief discussion of the internship requirements of the Environmental Science and Engineering Program based on personal experiences follows. The capability of conducting detailed air quality assessment acquired during the internship period is demonstrated here by delineating the scope of work and results of two important air quality modeling

projects. The first project discussed is to develop methodology for assessing the levels of human exposure to atmospheric concentrations of hazardous chemicals and to use the methodology on 35 listed toxic chemicals. This work is a typical air quality simulation model development assignment. The second project discussed is to assess the ambient air quality impacts that might result from the construction and operation of a crude oil pipeline system in the state of Washington. This an assignment involved the utilization of existing simulation models. The regulatory analysis, the interpretation of the results of estimation, and the possible implementations of the study were addressed together with the data preparation and the execution of the models.

SECTION I. INTRODUCTION

A. PURPOSES

This report describes my internship experiences on various environmental projects. The main objective is to fulfill the academic requirements for the degree of Doctor of Environmental Science and Engineering (D. Env.). This report is not a dissertation stating progress and achievements made in original research in a specific field for the Ph.D. degree. Rather, it addresses the experiences and capabilities obtained during the entire period of my internship in dealing with various practical environmental problems. Most of the projects encountered were treated, at the internship institutions, in a mission-oriented fashion, namely, using problem-solving techniques.

B. PROJECT EXPERIENCES

I did my ESE internship at the following three environmental consulting companies:

- * Eureka Laboratories, Incorporated (ELI) at Sacramento, California, from October 10, 1977 to May 7, 1978.
- * Flow Resources Corporation (FRC) at San Rafael, California, from May 8, 1978 to December 31, 1978.

* Systems Applications, Incorporated (SAI) at San Rafael, California, from Jan 1, 1979 to the present time.

All three companies are heavily involved in dealing with environmental problems associated with the fields of air pollution and energy development. As a technical staff member in the consulting firm, my major assignments included conducting the research work, managing the projects, writing the reports, preparing the proposals, and most important to an ESE intern--acquiring experience and capabilities. The various projects that I have been involved with during the internship period are discussed here.

1. Experiences at Eureka Laboratories, Incorporated (ELI)

ELI is a small environmental consulting firm founded by Dr. Steve K. Leung, a 1977 ESE graduate. The firm has very good reputation among different state agencies at Sacramento in providing services in the fields of emission inventory development, conducting surveys, and air pollution damage assessment. It also provides laboratory services in determining the organic content in air, water and soil samples. The majority of my work at ELI concentrated on two projects related to emission assessments. Through these experiences, I understood the complexity of preparing emission inventory and managing large data bases.

The first project, entitled "Air Pollution Emissions Associated