AN ANALYSIS OF THE HISTORICAL DEVELOPMENT OF A FIRE PROTECTION TECHNOLOGY PROGRAM WITH IMPLICATIONS FOR PROGRAM PLANNING

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CHAPTER I

THE PROBLEM

With the advancement of modern day technology in the United States, the control of fire has become increasingly difficult. Technological changes within industry and the fantastic increase in the number, variety, and sophistication of industrial products have created a fire and safety hazard that has never before been felt by man. Increased material wealth, population mobility, and population density have accented the fire problem. Today's social changes, including civil riots, have also created new fire problems. (1)

The advancement of technology and population characteristics has brought about a need for the advancement of fire protection. New fire protection techniques need to be developed. New fire equipment needs to be invented and manufactured. Federal and state legislatures need to revise and initiate control of hazardous products and the transportation of these products. State and local agencies need to enforce existing codes and ordinances. Fire department personnel need to be trained and educated to become effective fire fighters. Today's fireman needs to be a specialist in

fire fighting and not the traditional "jack of all trades". (10)

Education and training of fire personnel must be improved and modified to compensate for the increasing complexities of fire and its control. Fire departments have turned to the local colleges for assistance in the education of their personnel. New programs in Fire Protection Technology have been started at the college level. (10) Proper development of these programs must be achieved in order to justify their very existence. These programs have few available guide lines to follow. Guide lines set up by the older fire schools must be examined and analyzed to insure proper program development.

Purpose of the Study

The purpose of this study was to document the historical development of a fire protection technology program and analyze this program's historical development to determine implications for program planning.

Objectives of the Study

The objectives of this study were to:

1. Trace the development of a fire protection technology program from its beginning to the present.
2. Closely examine and analyze the school's evolution-

ary process with regard to objectives of the program, curriculum, graduate occupations, and teaching staff.

3. Emphasize points brought out by the historical study that would help present Fire Protection program planners. Emphasize implications for program planning.
4. Report personal feelings of past and present instructors and department heads concerning the program.

Significance of the Study

The number of fire protection (fire science) programs organized at the junior college level has increased rapidly in the past few years. In fact, the number of programs has increased by over 140% in the past four years. (15)

The administrators of these newly developing programs need to be aware of the historical development of the older surviving fire programs. An awareness of the problems resolved by the older fire programs will, expectantly, increase the likelihood of the success of the new programs. Hopefully, present programs will benefit from the past experiences of the older fire protection programs.

Procedure

The procedure of this study was to examine, analyze,

and record the historical development of the Fire Protection Technology program at Oklahoma State University to determine implications for present fire protection program planning.

The Fire Protection Technology program, as it appears in the Oklahoma State University catalogues between 1937 and 1969, was examined and recorded. This outline was used as a framework or skeleton for the development of the study. Special attention was given to the schools changing objectives, curriculum development, and graduate occupations.

Available past and present instructors and department heads were interviewed. The personal attitudes and feelings of these people were reported. The interviewer, also this studies author, followed a predetermined interview schedule. Each interviewee was asked the same questions (see Appendix A). The wife of a deceased department head was interviewed.

A thorough examination of the Fire School's records, located in the Campus Fire Station, was made. Past magazine articles and newspaper articles concerning the Fire School were reviewed. Also, past student research papers concerning the Fire Protection program were carefully read.

Limitations

1. This study was limited to the historical development of the School of Fire Protection Technology at Oklahoma State University. Established in 1937,

this school is the oldest surviving two year fire school in the United States.

2. Implications for program planning were based upon the historical development of the Fire Protection program at Oklahoma State University.
3. Some people interviewed had forgotten pertinent facts or may have reported a distorted picture, consciously or unconsciously, of the true development of the Fire School.
4. All past instructors and department heads were not available for personal interviews.

Definitions

Technology: An area of specialization usually in a mechanical or scientific subject. It is often used to denote a segment of the applied sciences, i.e., electronics technology. (9)

Engineering Technology: The part of the engineering field which requires the application of scientific and engineering principles coupled with the technical support skills; it falls in the occupational spectrum between the craftsman and the engineer at the end of the spectrum nearest the engineer. (20)

Fire Protection: The science of reducing loss of life and property by fire, including both fire prevention and fire

extinguishment by public or private means.

Fire Protection Technology Program: A college level program that trains and educates in the area of fire protection. This type of program includes all types of two year college level programs including the Fire Science program and the industrial fire protection program. Oklahoma State University's fire program is of the latter type.

Fire Science Program: A college level program that trains and educates in a special area of fire protection. This type of program is concerned primarily with municipal public fire protection or the training and educating of municipal fire service personnel.

Fire Engineering Program: A four year program dealing with Fire Protection Engineering. Heavy emphasis is placed on mathematics and science as in any college level engineering program such as: civil engineering, electrical engeering, mechanical engineering, etc.

Fire School: Any school (state program or college program) which is designed to train or educate in the area of fire protection. This includes both state supported short courses and two year college programs.

Fire Training: The training of fire fighters in the art of extinguishing fires and protecting property. Manual skills are usually emphasized, i.e., raising ladders or directing water streams.

Fire Service: The organized fire prevention and fire fighting service, including its members individually and collectively. A municipal fire department is part of the fire service.

Department Head: A person that administers or directs a school program. In the Oklahoma State University Fire program the department head is in charge of the Fire Protection Technology program, publication of International Fire Service Training Association Manuals, and State Fire Service Training Instructors.

CHAPTER II

REVIEW OF LITERATURE

Basically three types of literature will be reviewed in this chapter. The first type will be literature concerning the history of the School of Fire Protection Technology, Oklahoma State University. This first type of literature can be further broken down into three groups: college catalogues, a report, and magazine articles.

The second type of literature to be reviewed concerns Fire Protection (Fire Science) programs in the United States. Four recent studies are reviewed here in some detail. Today's fire program planner needs to be aware of other programs and trends throughout the United States.

The third type of literature to be reviewed concerns Technical Education in general. Four publications are mentioned that would be useful when planning a fire technology program or any engineering technology program. Accreditation of engineering technology curricula and programs is also briefly mentioned.

School of Fire Protection, Oklahoma State University

The Oklahoma State University catalogues from 1937 to the present contain much information concerning the fire schools curricula and objectives. (6) Brief descriptions of the courses are also found in the Technical Institute section of the catalogues. A complete set of catalogues can be found behind the information desk, second floor, Oklahoma State University library, Stillwater, Oklahoma.

A research report by Mr. Tom Davidson, entitled An Analysis of the Graduates of the School of Fire Protection Technology, Technical Institute, Oklahoma State University, investigates the past graduates of the fire school. The purpose of the study, as stated by Mr. Davidson, was to find as much information as possible about the graduates of the School of Fire Protection Technology. (9) The thirty page report was submitted in July, 1967 to the School of Industrial Education in partial fulfillment of the requirements of the course Industrial Education 540. Copies of the study are available in the thesis file of the Technical Education office.

Several short magazine articles have been written about the School of Fire Protection. The majority of these articles were written by past graduates of the School. Five of these magazine articles are listed below:

1. A & M College Magazine, January, 1954, page ten, contains an article entitled "Fire Protection Careers" by Major Jesse Townshend. (25) This article explains the Fire School, its facilities, and activities.
2. Fire Engineering, September, 1961, page 789, contains an article entitled "Oklahoma State University Revises Fire Protection Curriculum" by Roger K. Sweet. (24) This excellent article explains changes made in the program and gives other general information on the school.
3. Fire Station Digest, April-May, 1961, page 76, contains an article entitled "Fire Protection Technology Course Offered" by Fireman Gary Jensen. (17) This article again gives a general description of the Fire School, its activities, and curriculum.
4. Oklahoma State Alumnus Magazine, March, 1962, page 29, contains a very short article concerning the death of R. J. Douglas. (21) Mr. Douglas' background and accomplishments are reviewed.
5. The Volunteer Firefighter, February, 1960, page 5, contains an article entitled "The School of Fire Protection Technology at Oklahoma State University" by Alan V. Brunacini. (4) This article again gives a brief account of the School.

Fire Protection Programs in the United States

Four recent studies have been carried out concerning college level fire schools in the United States. Literature available to the present day fire school administrator is limited since little has been written about the newly developing college level fire programs.

These four studies basically list and review the colleges, universities, and technical institutes that offer a program in fire protection technology, fire science, or fire protection engineering.

Listed below are the four studies with information on how they may be obtained. Also, a summary of the study is given, in part, by means of reviewing the table of contents of each study.

1. Fire Science Technology Curricula Survey
   International Fire Administration Institute
   Center for Executive Development
   State University of New York at Albany
   135 Western Avenue
   Albany, New York 12203 (12)

This study, directed by D. F. Favreau, was published in November, 1966, at a selling price of one dollar ($1.00). This forty-two page report contains the following information:

Summary chart of Fire Science Curriculum (a selected sampling of fire science courses)

Degree courses in Fire Science Technology
Names and addresses of nineteen schools

Objectives of the schools
Curriculum of the schools

Non-degree courses in Fire Science Technology
Names and addresses of seven schools
Objectives of the schools
Curriculum of the schools

Suggested curriculum including a written report explaining new curricula in colleges and universities.

A list of State Fire Marshals

A list of State Directors of Fire Training

A list of colleges and universities represented in the study (12)

2. Higher Education in the Nation's Fire Service
International Fire Administration Institute
(same address as above) (15)

This study, also directed by D. F. Favreau, was published in February, 1968, at a selling price of two dollars ($2.00). This fifty-four page report contains the following information:

Summary chart of Fire Science-Administration courses (a selected sampling of fire science courses)

Map of the United States indicating locations of Fire Science-Administration programs

Directory of schools of higher learning offering courses in Fire Science-Administration:

Names and addresses of sixty-six schools
Program directors of schools
Title of school program
Date program began
Degree offered
Semester hours in major
Number of students enrolled
Number of graduates to date
Number of instructors

Fire Science-Administration...Selected Curricula (curricula from fourteen programs)

College and university philosopny and policy regarding new curricula

Recommendations for Fire Science program development and implementation

A list of State Fire Marshals and/or Directors (15)

3. College Training for Firemen
Lawrence Radiation Laboratory
University of California
Livermore, California 94550 (7)

This study, conducted by L. C. Clements, was published in March, 1967, for free distribution to interested parties This paper was presented at the Fire Department Instructor's Conference (F.D.I.C.) in Memphis, Tennessee on March 23, 1967. The forty-three page report contains the following information:

Ten pages dealing with:

Survey method
The challenge of fire fighting
Engineering influence
Legislative influence on technical education
Report (or summary) of survey
Junior and community colleges, technical, and vocational institutions
Comparison of police and fire science
Problems and recommendations

Four-year institutions with curriculum

Junior and Community Colleges, Technical and Vocational Institutes with curriculum. The following information was reported by each state:

State
Person who filed report with addresses
Type of institution

Number of institutions in state
Degree offered
Total college credit hours required
Day and/or inservice program
Tuition per credit hour
Other programs planned
Number of students enrolled

Proposed Fire Science Curriculum by John Shreve (7)

4. Advisory Study Committee on Fire Protection and Fire Prevention Education
University of Minnesota
General Extension Division
Office of the Associate Dean
Nicholson Hall
Minneapolis, Minnesota 55455 (1)

This excellent study by Mrs. Antona Richardson was published in June, 1968, and appeared in the September, 1968, issue of Minnesota Municipalities. The price of the study itself is free. This fifteen page report is an evaluation of education and training programs throughout the United States and a proposal for a Minnesota program. The report contains the following information:

Area of investigation

Major findings - 12 statements

Recommendations - 12 statements

Minnesota fire service educational needs

Fire Service educational programs in other states:

Degree programs
Short courses, seminars, and institutions
Experience with programs
Faculty
Pre-Service students
Scheduling courses

Participation in courses
Incentives
Program coordination
Competition between institutions
Relation of educational programs to in-service training

A program for Minnesota (1)

The preceding has been a review of the four recent studies carried out concerning college level fire programs found in the United States. Detailed reporting has been emphasized in hopes that interested individuals will secure these important studies for use when planning, administering, advising, or instructing in a fire program.

Technical Education in General

Within the past ten years, several studies and articles have been aimed at advancing the general engineering technical program. The main objective of many studies is pointed at setting guide lines for construction and improvement of all technical institute programs whether the program is that of Fire Protection, electronics, radiation, or any other specific field of technology.

Rated high among recent studies intended to help improve the nature of technical institute education is the McGraw Report of 1962. This report of a study sponsored by the American Society for Engineering Education is titled, Characteristics of Excellence in Engineering Technology

Education. (20) The purpose of the study was to develop quality standards to serve as guide lines for constructing, improving, and evaluating engineering technology programs. The report covers the following portions of engineering technician education:

Definition of terms

Faculty

Students

Curriculum

The Curriculum portion is broken down into three main parts: technical courses, which include technical skills and specialities; basic science courses, which include mathematics and physical sciences; and, non-technical courses, which include communications, humanities, and social sciences. (20)

Further information on the development of technical institute programs are two books written by leading figures in technical education. Henninger's book entitled, The Technical Institute in America, (14) and Graney's, The Technical Institute, (13) both offer a number of general guide lines to help establish engineering technician programs. (19)

Another useful document is a United States Office of Education publication, Occupational Criteria and Preparatory

Curriculum Patterns in Technical Education Programs. (26) This booklet furnishes many useful hints concerning definitions, occupational, and educational requirements for establishing post-high school technician type educational programs. (19)

To assure the public that each school training engineering technicians is accomplishing its' objectives and that those objectives are considered to be within the accepted scope of engineering technology is best done by a professional accrediting agency. Since 1944, the accreditation of engineering technology curricula has been done by a sub-committee of the Engineering Council of Professional Development (E.C.P.D.). This organization does not dictate details of the curricula, but rather the organization recognizes those curricula which meet professionally established standards of academic level and competence. (19) The Oklahoma State University School of Fire Protection Technology's curriculum has been accredited by E.C.P.D. since 1949. It is the only Fire Technology curricula with this type accreditation listed by E.C.P.D.

In addition to the professional accreditation done by E.C.P.D. which accredits only curricula, there is a regional accreditation curried on by six regional accrediting

agencies such as the North Central Association, Middle States Association, etc. The purpose of these agencies is to accredit entire institutions. Not only does this accreditation inform and protect the public by identifying the objectives, quality, and academic level of the programs of the institution, but the accreditation also helps the institution receive guidance and support in maintaining and raising the general standards of the institutions. (19)

CHAPTER III

HISTORICAL DEVELOPMENT OF THE FIRE PROTECTION PROGRAM AT OKLAHOMA STATE UNIVERSITY

The material presented in this chapter is concerned with the historical development of the Fire Protection program at Oklahoma State University. This chapter has been divided into seven distinct topics -- the University, the beginning of the fire program, training building, World War II, objectives and curricula, graduate occupations, and teaching staff. Each topic is designed to help unfold the historical development of the Fire Protection program.

The University

Oklahoma State University, formerly Oklahoma Agricultural and Mechanical College, was established by an act of the First Territorial legislature, effective December 25, 1890. A locating board was appointed June 1, 1891 and on July 11 this board reported to the governor that the institution had been located on 200 acres of land immediately adjoining the city of Stillwater, Oklahoma, in Payne county. (6)

A board of regents was appointed by the governor, and the college was formally opened on December 14, 1891, in the Congregational church of Stillwater, with an attendance of forty-five students. (6)

The first college building, now known as Old Central, was completed and dedicated on June 14, 1894. The College gradually developed those lines of work authorized by the Acts of Congress and the Acts of the Oklahoma legislature until it became the Oklahoma institution organized under the provisions of the "Land Grant" or Morrill Act. (6)

Presently the University's property includes the main campus of 150 acres at Stillwater, the university farms totaling 2,245 acres which immediately adjoin the campus on the west and north, and 19 experiment stations located over the state. The present valuation of university property including 41 major buildings, is about $50 million. (6)

The Beginning of the Fire Program

Prior to 1931 the Oklahoma Fire Training program had had a meager existence under the direction of Fire Chief J. E. Taplin of Blackwell, Oklahoma. Chief Taplin, a former school teacher had tried through the State Department of Vocational-Technical Education to initiate a worthwhile fire training program. Through his efforts, a combination catalogue and reference manual was published by the State Voca-

tional-Technical Education Department entitled: Essentials of Firemanship. The book was not well received. (16)

Through Chief Taplin's efforts, Professor Charles W. Briles, then state supervisor for Trade and Industrial Education, became sympathetic and interested in the problem of educating Oklahoma fire fighters. The state Trade and Industrial Education Department sponsored the first state fire school at the Oklahoma A & M College in 1933. (16)

This first state fire school had an attendance of approximately forty interested Oklahoma fire fighters. No set course of instruction had yet been established and current topics were presented by members of the group. This school and others to follow were highlighted by the experience of Harry K. (Smoky) Rogers of the Western Actuarial Bureau, Chicago, Illinois. (16)

During the year following the first state fire school, Professor Briles, through a committee of four selected Oklahoma fire chiefs -- J. Ray Pence of Stillwater, J. E. Taplin of Blackwell, Edward Haley of Ada, and George B. Goff of Henryetta -- persuaded Professor W. Fred Heisler to help establish a curriculum (course of study) of training courses for a vocational state fire program. (16)

Mr. Heisler had originally come to Oklahoma A & M College from the Ponca City school system for the purpose of developing training material for the petroleum industry.

Mr. Heisler had a gift for writing training manuals for any job. It was for this reason that he was approached by Professor Briles and the four fire chiefs to help establish a curriculum for state fire training in Oklahoma. (5)

Through Mr. Heisler's efforts, the first Oklahoma A & M fire service training manual was published by mimeograph in 1933. Since manual skills were predominantly the type of training desired, this first manual was limited to this category. This first one-book manual contained a total of thirty-one pages. This book represents the beginning of what we now know as the International Fire Service Training Association Manuals. (Presently twenty-three separate manuals are published) (16)

W. Fred Heisler's interest in the area of technical training prompted him to imply, in his Master's thesis entitled Elementary Science Applied to Petroleum Production and Refining, the need for a school of technical training.

Based upon Mr. Heisler's proposal, the school of technical training (later called the technical institute) was established in 1937 with course offerings in Firemanship Training, Internal Combustion Engines, Welding and Machinist Training. (16) The program title of Firemanship Training was later changed to Fire Protection Technology. The term "Tech A" was designated to the program because the fire program was originally the first program in the Technical In-

stitute. (23)

The Firemanship Training program was also made possible by the cooperation of the International Fire Chiefs Association and the National Board of Fire Underwiter's, through their state representatives, the Oklahoma State Fireman's Association, and the Oklahoma Inspection Bureau. (6)

Because of the lack of a person to head the Firemanship program, Mr. Heisler taught the first related courses and Mr. Everett Hudiburg, a Stillwater fireman, taught the practical aspects of fire fighting to the first class in 1937. Classes were held at the old downtown fire station and the first class initially had five students. (16) Later that same year and the next year other students enrolled. The following were enrolled in the first classes: Ray Davidson, Don Selig, Woodrow Wilson, Max Stone, Gilette Sanders, Vance Smith, Frank Gates, Clay Albright, Glenn Boughton, Oscar Williams, Lynn Gregg, Howard Clanton, and Johnny Warren. Under the direction of Oklahoma A & M College president, Henry G. Bennett, and through the efforts of Dean Phillip S. Donnell, School of Engineering, Mr. Raymond J. Douglas was selected to head the firemanship program starting on New Year's day, January, 1938. (11)

Mr. R. J. Douglas was a high school teacher, football coach, and volunteer fire chief in Moorefield, West Virginia before being chosen to work under W. Fred Heisler. Mr.

Douglas had been appointed volunteer fire chief by the Moorfield city council after a prominent businessman's house had burned to the ground showing a need for local fire protection. Mr. Douglas, knowing nothing about fire protection, attended and later taught fire classes at West Virginia University and the University of Maryland. He held a Bachelor's and Master's Degree from Davis Elkins College and West Virginia University. (11)

R. J. Douglas, on arrival at Oklahoma A & M College, was given the tasks of developing the curriculum and instructing the students in the new Firemanship Training program. (5) Appendix B shows the first curriculum of the Firemanship Training program as it appeared in the 1938 Oklahoma A & M College catalogue. The emphasis of this early curriculum was on manual firemanship skills.

The objectives of the program at this time were to train students to become municipal fire fighters. However, because of the higher salaries offered by industries and insurance companies, only about one-third of the graduates of the first two classes went into fire department work. (5) In later graduating classes even less went into municipal fire protection.

Training Building

The first half of the campus fire station was completed

in September, 1938, by the city of Stillwater under the guidance of Chief J. Ray Pence. Later the second half was completed by the University after securing a federal grant. The Fire Service Training Building, as it was then called, was dedicated the morning of November 4, 1939. The total cost of the building was $100,000.

The Training Building was first designed to train young men for the vocation of fire fighting and to be used as a sub-station for the city fire department. (6)

Ever since its completion the building has housed the School of Fire Protection. Most of the fire protection students acted as volunteer firemen for the city of Stillwater, while living on the second floor of the building. The International Fire Service Training Association Manuals editor also occupied offices in the building.

The brick structure is three stories high with laboratory facilities and a eighty-four foot drill tower in the rear (114 foot tower including the wooden spiral). The first floor of the building houses the fire department. The second floor was home for the students (volunteer firemen). The third floor houses the Fire Protection School.

World War II

Under Mr. Douglas' leadership, the school grew in numbers and prospered in course content until 1941. After

Pearl Harbor, Mr. Douglas left the school to work as the Fire Marshall of the Beech Aircraft Corporation, Wichita, Kansas. (16) He worked there from 1942 to 1946 at which time he was offered a peace time job by Beech Aircraft at twice the salary he would be making at Oklahoma A & M. Despite the high salary offered he returned to resume his position at the Fire School. (11)

The School of Fire Protection at Oklahoma State University operated without teaching any accredited fire protection courses during World War II. The School was, however, used as a center for the training of volunteer firemen, industrial fire brigades, and civilian defence people. Many short courses were offered under the guidance of Mr. Hudiburg and Mr. Heisler. (5) It was during this was period that Dean Donnell debated whether the school should close altogether. (16)

People like Emmett Cox, Horatio Bond, and other prominent fire protection people came to Stillwater during the war for training purposes. The Fire Protection School in Stillwater was considered by these people to be the "West Point of Fire Protection". (5)

One of the students of the second graduating class also went to Beech Aircraft to work with Mr. Douglas as a Fire Brigade Trainer and Fire Inspector. This man, W. C. Buck, was later to become a part-time instructor at the Fire Pro-

tection School for fifteen years.

Objectives and Curricula

The initial objective of the program was to train municipal fire fighters for the state of Oklahoma. (8) (16) However, because of the higher salaries offered by the insurance companies and industry, the majority of the students did not enter the municipal fire service. In fact, only one-third of the first two graduating classes entered fire departments or became state fire trainers. (5) For this reason the objectives of the school shifted quickly to include training and education of insurance inspectors and industrial fire protection people as well as municipal fire fighters.

The curriculum offered in the Firemanship Training program in 1938 can be seen in Appendix B of this report. A certificate of completion was awarded upon completion of the two year course. Manual skills were emphasized in two of the six Tech. A courses offered in 1938. The "practice" courses were based on the newly developing state training manuals (presently called the I.F.S.T.A. manuals).

During 1938 the six Tech A courses included: Fire Fighting Practices, Fire Hazards and Fire Causes, Fire Protection, Fire Prevention, Fire Fighting Practices II, and Fire Fighting Tactics. The curriculum the next year in-

cluded these with the addition of Fire Department Inspection Practices and Fire Prevention. In 1941 a second Fire Department Inspection course was offered along with courses in Fire Hydraulics and First Aid and Life Saving. This made a total of eleven Tech. A courses in the curriculum at this time. This curriculum remained stable until 1947 at which time a course in Fire Extinguisher Installation, Maintenance, and Recharge was introduced. However, the next year the Extinguisher class was temporarily dropped. (6)

During the period from 1938 to 1948 the Oklahoma A & M College catalogue summarized the Firemanship Training program as follows:

> Firemanship has come to be a highly technical job due to the development of commodities involving inflammable and explosive materials, modern building construction and occupancy, and the scientific means of fighting fires. One who enters this service must be a technician and yet be skilled in the various phases of fire protection and prevention. It being an emergency job, he must be able to think quickly and accurately. To do this his mind must be trained as well as his hands and he must have a store of information for immediate use at all times.
>
> The curriculum in Firemanship Training is designed to supplement actual practices with directly and indirectly related technical and academic information. A part of each term is spent in actual practice in a modern fire station with modern equipment. This is supplemented directly with technical courses in firemanship, science, mathematics, shop work, and drawing. In addition, courses in English and government round out a planned general curriculum that leads toward employment in the fire fighting service. (6)

In 1949, the name of the school was changed from Fire-

manship Training to Fire Protection. (Later in 1957 the name again changed to Fire Protection Technology) The objectives, as stated in the college catalogue also changed in 1949. (6) The shift toward insurance and industry became more evident. The 1949 catalogue read:

> The fire protection course has been organized to give training in detecting and eliminating fire hazards; conducting year around fire prevention activities; fire inspection technique; installing, testing, adjusting, and maintaining the protection equipment and applying modern methods of industrial and municipal fire fighting. Every effort is made to put the information gained in class and laboratory into actual use at some time during the training period. In addition to the specialized subjects, the curriculum includes directly related academic subjects such as English, mathematics, chemistry, physics, psychology, and public speaking as well as related technical subjects such as safety, air conditioning, heating equipment, electrical installations and insurance. The student is thus guided into a well-balanced program of information and instruction that will qualify him for positions in the fields of insurance inspection, rating bureaus, fire protection equipment, installation and sales, fire prevention, and industrial and municipal fire protection. (6)

The curriculum in 1949 also changed. The Fire Extinguisher class was resumed and a course entitled Automatic Sprinkler Protection was initiated. The curriculum, as it appeared in the May, 1949, college catalogue can be seen in Appendix B of this report. The curriculum revision in 1949 remained unchanged for fourteen years or until 1963. A brief description of these 1949 through 1962 courses can be seen in Appendix C. (6)

In 1949 the School of Fire Protection Technology curriculum was accredited by the Engineers' Council for Professional Development (E.C.P.D.).

The graduates in 1958 were the first to receive the Associate Degree (A.D.) rather than the certificate. History and political science requirements in the past had prevented the graduates from receiving the Associate Degree. (9)

The objectives of the program again shifted in 1963. This time only slightly. The last major change in 1949 had given the student more training in the area of insurance inspection. The shift in 1963 was toward providing more training for the industrial fire protection specialist. In 1965 the Oklahoma State University catalogue introduced Fire Protection Technology as follows:

> The curriculum in fire protection technology provides a fundamental background of technical subjects that teach the student to detect and correct fire hazards, make technical fire inspections, and conduct year around fire prevention activities. He also learns how to install, test, adjust, and maintain equipment for detecting, limiting the spread of, or extinguishing fire and to apply modern methods of municipal and industrial fire fighting
>
> The student is guided into a well-balanced program of information and instruction that will qualify him for positions in the fields of insurance inspection, rating bureaus, fire protection equipment installation and sales, fire prevention, and industrial and municipal fire protection. (6)

As is evident in the revised curriculum of 1963 (Appendix B), many of the practice courses, such as Fire Fight-

ing Practices I and II and Fire Fighting Tactics had been dropped to make room for industrial fire courses such as Fire Codes and Standards, Industrial Fire Hazards, and Water Supply Analysis. This new curriculum was not changed until 1967. A brief description of each of these ten Tech. A courses can be read in Appendix C of this report. (6)

Structural Fire Protection and Fire Protection Applications were substituted for Codes and Standards, Principles of Fire Inspections, and Fire Inspection Practices. The 1967 (to the present) curriculum can be viewed in Appendix B of this report. (6) Also, a brief description of the 1967 fire courses offered can be seen in Appendix C.

Briefly summarizing it can be said that the Fire School was originally designed to train municipal firemen. However, from the beginning the majority of graduates went into the insurance and industrial fields of work. In 1948, the curriculum change reflected the fact that the majority of the students were going into the insurance and industrial occupations. The curriculum change in 1963 introduced even more industrial courses.

A general statement concerning the School's objectives would suggest a trend from firemanship training (1938) to insurance inspection training (1948) to industrial fire protection (1963). Keep in mind that during any period in the School's history graduates did enter all of the main job

fields indicated above.

Occupations Entered After Graduation

The initial occupations held by the graduates have varied during the history of the School. Graduates have characteristically entered one of three job areas -- municipal fire fighting including state fire training, insurance inspection including rating bureau inspection, and industrial fire protection engineering. Other job areas which occasionally attract students include state organizations such as a State Fire Marshal's office and federal organizations such as the Atomic Energy Commission. Also, the armed forces, colleges and universities, and fire equipment sales companies attract students. (9)

Only one-third of the graduates of the first two graduating classes entered the fire service either as firemen or state fire instructors. (5) The remaining two-thirds of the graduates went into other areas of fire protection including insurance and industry. After World War II the majority of the graduates went to work for insurance companies as fire inspectors. Presently during the middle 1960's the majority of graduates are being attracted toward industry. (2)

The number of graduates from the Fire Protection School at Oklahoma State University from 1938 to the present can be seen in Table 1. It is interesting to note the larger num-

TABLE I

NUMBER OF GRADUATES FOR EACH YEAR (9)

1938 - 1969

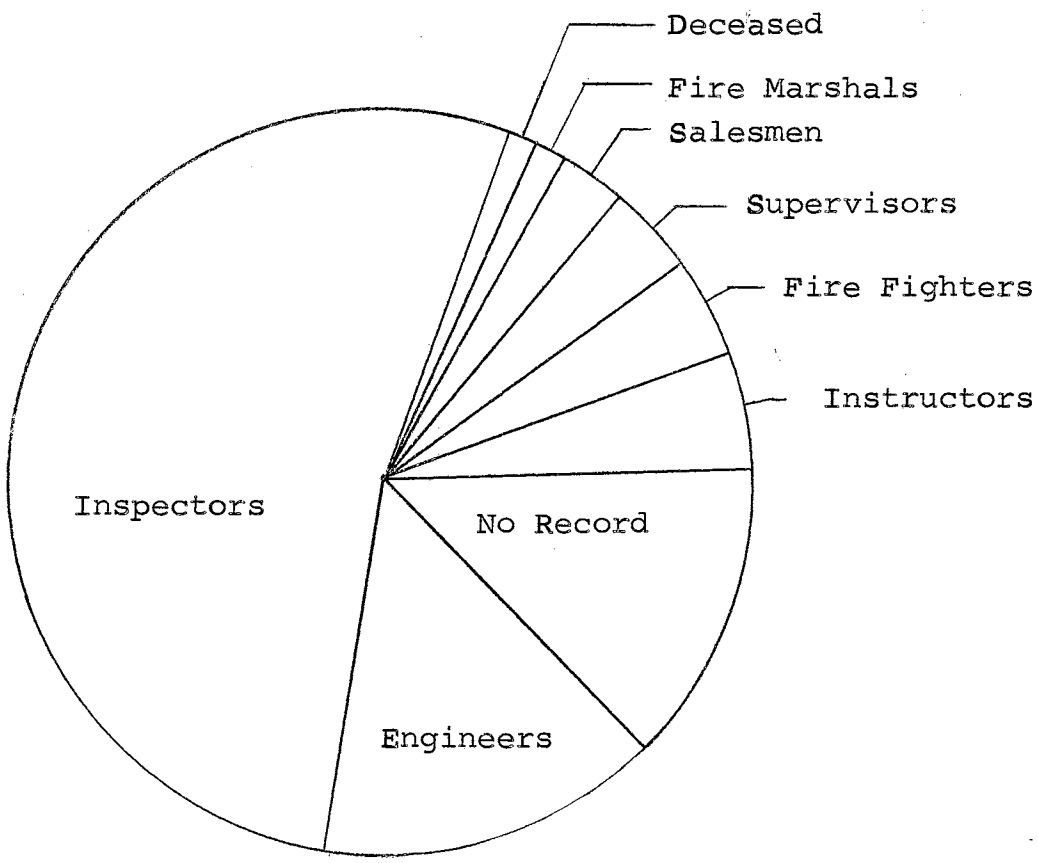
Year	Number of Graduates
1938	3
1939	2
1940	1
1941	2
1942	1
1943	no record
1944	no record
1945	no record
1946	no record
1947	1
1948	2
1949	2
1950	8
1951	8
1952	15
1953	8
1954	11
1955	8
1956	20
1957	39
1958	25
1959	22
1960	16
1961	10
1962	19
1963	12
1964	8
1965	15
1966	17
1967	10
1968	12
1969	9
TOTAL	296

ber of graduates during the period between 1956 through 1959. This four year span may have had a higher number of graduates because of a good recruitment program or the G.I. Bill of 1955. (9) The majority of information on Table I from 1938 to 1967 was obtained from a 1967 report by Mr. Tom Davidson entitled, An Analysis of the Graduates of the School of Fire Protection Technology, Technical Institute, Oklahoma State University. (9)

The final occupations chosen by the past graduates can be seen graphically in Figure 1. This graph represents the job areas chosen by the 1938 to 1967 graduates. These job areas are not necessarily initial occupations but rather the fire protection graduates occupations in 1967.

The majority of the graduates in 1967 had jobs as Fire Inspectors (insurance inspectors and rating bureau inspectors). The next largest occupation is that of Fire Protection Engineers including the supervisors occupation (industrial fire protection people). The Instructors and Fire Fighters occupations represent the number of graduates working in the municipal fire service. Other job areas are also listed.

By this illustration it can be seen that the majority (approximately 50%) of the graduates went into insurance, many went into industry (approximately 20%) and others went into the fire service (approximately 10%). A few graduates



Occupations	No. of Graduates*	Percentage
Fire Inspectors	145	52.7
Fire Protection Engineers	40	14.6
No Record	37	13.5
Instructors	14	5.1
Fire Fighters	13	4.7
Supervisors	12	4.4
Fire Equipment Salesmen	9	3.2
Fire Marshals	3	1.1
Deceased	2	.7
Totals	275	100.0

*Fire Protection Graduates 1937-1967 totaling 275

Figure 1. Occupations of Fire Protection Graduates (9)

entered other fields.

It may be interesting to note at this point that the past and present students have come from almost every state in the Union -- from California to Maine. Also, graduating students have been employed in nearly every state. (9)

Teaching Staff

The department heads and part-time instructors have had substantial academic background. Most of the department heads and part-time instructors have also had some experience in industry or some job related to fire protection. This high quality staff has made the School of Fire Protection Technology at Oklahoma State University the oldest surviving, and highly respected school of its kind in the United States.

Mr. W. Fred Heisler, founder of the School of Technical Training in Oklahoma and founder of the Firemanship Training Program therein, was originally from the Ponca City school system. (16) He held a Bachelor's Degree and a Master's Degree in Trade and Industrial Education. Mr. Heisler originally had no experience as a fire fighter but had the ability to write training manuals by conferences with leaders in any field. After Mr. Heisler wrote one of the first Oklahoma fire fighting training manuals, he became interested in the fireman's training problem and continued to re-

search and author many other fire training manuals.

Mr. R. J. Douglas, the real backbone and developer of the fire program, was originally from Moorefield, West Virginia. His academic background includes a Bachelor's Degree in Chemistry from Davis Elkins College and a Master's Degree in Chemistry from West Virginia University. Mr. Douglas had been active for seven years as a volunteer fire chief. He had held a part-time job instructing fire courses at West Virginia University and the University of Maryland. His full-time job in Moorefield was that of a high school teacher and athletic coach. (11)

During his career at the Stillwater fire school, he was selected as an adviser to the National Academy of Sciences national research council on fire research. He was also a figure each year in the Fire Department Instructors Conference in Memphis. (21)

Mr. R. J. Douglas was the first man in Oklahoma to conduct a series of lectures on fire protection over television. W K Y in Oklahoma City was that television station in the early 1950's. (5)

R. J. Douglas died of a heart attack in his home on January 22, 1962. He was 59 years old. (11)

Other prominent past instructors include W. C. Buck and Everett Hudiburg. Mr. Buck, a past graduate of the fire school, also had a Bachelor's Degree in Trade and Industrial

Education from Oklahoma State University. His experience while teaching part time includes a career on the Stillwater Fire Department (rising to the position of assistant chief). During the war "Buck" worked at the Beech Aircraft Corporation in Wichita as a Fire Brigade Trainer and Fire Inspector.

Mr. Everett Hudiburg was the first instructor at the fire school. Later he taught on a part-time basis with R. J. Douglas and W. C. Buck. His experience while teaching part time includes a career on the Stillwater Fire Department where he rose to the position of chief. Mr. Hudiburg received a Bachelor's Degree in 1934 in Industrial Arts Education. Presently Mr. Hudiburg is the editor of the International Fire Service Training Association, "Red" manuals. He has been the editor for fourteen years. (16)

Mr. Heisler, Mr. Douglas, Mr. Buck, and Mr. Hudiburg were associated with the school during the 1930's, 1940's, and 1950's. During the 1960's the teaching staff at the fire school has been characterized by a rapid turnover of head (full-time) instructors and part-time instructors. Five different head instructors have been employed since 1964.

Elmer Johnson, "hand picked" by R. J. Douglas, became department head after the death of Mr. Douglas. Mr. Johnson had a degree in Fire Protection from Oklahoma State University, a Bachelor's Degree in Education, and a Master's

Degree in Psychology. Before his employment in 1962 he worked eight years for Phillips Petroleum at which time he was their Assistant Safety Director. (5)

In 1964 Mr. G. L. Sartain became the department head of Fire Protection Technology School, IFSTA publications department, and fire service extension department. Mr. E. Johnson then became head instructor for a period of one year. Unfortunately, Mr. Johnson left the fire protection program in 1965.

Mr. Sartain has never taught in the School of Fire Protection Technology. His background includes a Bachelor's Degree in Education and twenty-five years as a Tulsa fire fighter, nine years as chief. (22) His main function in the fire protection school is that of administrator. He is responsible for the operation of the Fire Protection School and its teaching staff, which consists of a head instructor and a part-time instructor.

Following Mr. Johnson, Mr. John Shreve became head instructor. Mr. Shreve's academic background includes an Associate Degree in Fire Protection Technology and a Bachelor's and Master's Degree in Trade and Industrial Education. Mr. Shreve had previously worked on the staff of the IFSTA manuals for two and one-half years before teaching in the School for one school year.

Mr. Roland Barker was the next head instructor. His academic background included a Bachelor of Science in Fire Protection Engineering from the Illinois Institute of Technology and a Master's Degree (MBA) in Industrial Management. Mr. Barker had also worked for the Oklahoma Inspection Bureau as an engineer before coming to the shcool.

Mr. Barker was employed for one semester at which time Mr. Ken Johnson took up the position as acting head instructor. Mr. Ken Johnson had previously been a part-time instructor under John Shreve. Mr. Johnson also had an Associate Degree in Fire Protection and was working on his Bachelor's Degree in Technical Education.

Mr. Ray Sale worked as a part-time instructor under Mr. Johnson for one semester. Mr. Johnson and Mr. Sale both left the School in May of 1967. (23)

Mr. David Ballenger and Mr. David Stadel have been employed at the School of Fire Protection Technology since 1967. Mr. Ballenger, a past graduate of the program, holds a Bachelor's Degree in Trade and Industrial Education. He has had nine and one-half years experience as a senior state fire instructor for the state of Montana. Mr. Ballenger is presently working toward a Master's Degree in Trade and In-

dustrial Education. (2)

Mr. Stadel, the part-time instructor, has two associate degrees, one of which is from the Fire Protection School. He also holds a Bachelor's Degree in Trade and Industrial Education. Like Mr. Ballenger, Mr. Stadel is also working for a Master's Degree in Trade and Industrial Education. Mr. Stadel has had several years experience as a volunteer fire fighter both in the states of New York and Oklahoma. (23)

Table II shows all the department heads and instructors who worked in the Fire School from 1937 to the present. The dates that they were employed have been included. Also, the teaching staffs academic background and working experience prior to employment can be seen in Table II.

TABLE II

DEPARTMENT HEADS AND INSTRUCTORS
1937 TO THE PRESENT

Person	Position	Dates	Degrees	Working Experience
W. F. Heisler	(Founder) Dept. Head Instructor	1937	B. S. M. S. Trade & Ind. Ed.	No Fire Protection Experience
E. Hudiburg	Part-Time Instructor	1937	B. S. Ind. Arts Educ.	Fire Fighter 7 yrs. State Fire Instructor 2 years
R. J. Douglas	(Developer) Dept. Head Instructor	1938-42 1946-62	B. S. Chemistry M. S. Chemistry	Volunteer Fire Chief 7 years Taught Fire courses West Virginia and Un. of Maryland
*W. C. Buck	Part-time Instructor	1949-65	Fire Prot. Certificate B. S. Trade & Ind. Educ.	Fire Brigade Trainer & Fire Inspector at Beech Aircraft Corp.
*E. Hudiburg	Part-time Instructor	1952-61	Fire Prot. Certificate B. S. Ind. Arts Educ.	State Fire Instructor 2 years Fire Fighter 20 yrs.

TABLE II (continued)

*Elmer Johnson	Dept. Head Instructor	1962-65	A. D. Fire Prot. B. S. Education M. S. Psychology	Asst. Safety Director Phillips Petroleum 10 years
G. L. Sartain	Dept. Head Administrator only	1964-present	B. S. Education	Fire Fighter 25 yrs. Tulsa Fire Chief 9 years
*John Shreve	Full-time Instructor	1965-66	A. D. Fire Prot. B. S. Trade and Ind. Ed. M. S. Trade and Ind. Ed.	Asst. Editor I.F.S.T.S. Manuals 2½ years
*Ken Johnson	Part-time Instructor	1965-67	A. D. Fire Prot.	Fire Fighter 15 yrs. State Instructor 7 yr.
R. Barker	Full-time Instructor	1966-67	B. S. Fire Prot. IIT M. B. A. Ind. Mangt.	Engineer Okla. Insp- ection Bureau
*Ken Johnson	Full-time Instructor	1966-67 2nd semester	-----	-----
Ray Sale	Part-time Instructor	1966-67 2nd semester	none	Fire Fighter 7 yrs.
*D. Ballenger	Full-time Instructor	1967-present	A. D. Fire Prot. B. S. T. & I. Ed.	State Fire Instructor 9½ years
*D. Stadel	Part-time Instructor	1967-present	A. A. S. Business A. D. Fire Prot. B. S. T. & I. Ed.	Fire Equipment Sales 2 yrs. Volunteer Fire Fighter 7 yrs.

*Graduated from the Fire Protection Program at Oklahoma State University

CHAPTER IV

AN ANALYSIS WITH IMPLICATIONS FOR PROGRAM PLANNING

The material presented in this chapter is concerned with the analysis of the historical development of the Fire Protection program at Oklahoma State University with implications for program planning. This chapter has been divided into two sections. The first section deals with an analysis of the Fire Protection program itself. The second section is concerned with reporting the opinions of past and present instructors and department heads.

The Fire Protection Technology Program

The Fire Protection Technology program in Stillwater, Oklahoma had the distinct advantage of being located in a large university. General education and related courses of high caliber were available in the various colleges to supplement the Fire Protection courses. Also, related services and student activities were readily available. All the advantages of a large university were present to help the success of the small fire program.

The University also offered another unique feature.

Graduates of the two year fire program had the option of either seeking employment directly or enrolling in one of the three education programs as a junior and working toward a Bachelor of Science Degree. The three educational programs -- Technical Education, Trade and Industrial Education, and Industrial Arts Education -- allowed those fire protection students with the desire and ability to earn a higher degree with only two additional years of school.

Almost immediately after the program started (1937) a fire service training building was built to house the new fire program and its students. The cost of the building was $100,000 which shows the interest and backing of the program. The new large three story brick structure perhaps gave an identity to the fire school. With the completion of the building, the fire program had its own classrooms, offices, training facilities, living quarters, and even the use of the Stillwater Fire Department for practical experience of an emergency nature.

With the School's early objective of training and educating would-be fire fighters, the curriculum emphasized "practice" courses. Major curriculum changes in 1949 and in 1963 (with minor changes throughout the School's history) were aimed directly at emphasizing industrial fire protection. By 1963, nearly all the practice courses were eliminated for the more theoretical courses. During the School's

history the objectives and curricula were changed to fill the needs of insurance companies and industries that were hiring the graduates. (Insurance companies and industries are presently in great need of the fire protection technology graduates)

Insurance companies and industries were offering substantially higher salaries to the fire protection graduates. (8) The municipal fire department, for which the graduates were also highly trained, could not and did not hire many graduates. Most of the graduates who entered a fire department started at the bottom with little chance to use their newly acquired knowledge. This, along with resentment displayed by the older uneducated firemen, usually would result in the fire protection graduate leaving the fire department for a different type of fire protection occupation. It should also be pointed out here that many of the students who went into fire department work were employed as state fire service trainers. This position of state fire instructor gave the graduate both much needed status and an opportunity to work with skills and knowledge previously acquired at the Fire Protection School.

The teaching staff at the Fire Protection Technology School has always been highly qualified. All of the instructors at the Fire School, with the exception of two, have held at least a Bachelor's Degree. Several have held

Master's Degrees. Table 2 on pages 42 and 43 shows the academic background of all the past and present instructors. It is interesting to note that a majority of the instructors were past graduates of the Fire Protection School in Stillwater. Apparently, those people who have a formal training in Fire Protection and have studied in a college level fire program are better able to teach in a fire program. In many cases in the Oklahoma Fire Protection School, the only qualified people available to teach were past graduates.

Mr. R. J. Douglas, developer of the Fire School, held a Bachelor's and a Master's Degree in Chemistry. His background included a position as a full-time high school teacher and part-time college instructor -- instructing courses in fire protection. With this "key" individual the school was able to advance to a position of leadership with the nickname of "The West Point of Fire Protection".

Opinions of Past and Present Instructors

Several points were brought out by the past and present department heads and instructors, during their interviews, which should be mentioned at this time. Interveiw schedule questions numbers 10, 12, 13, and 14 (see Appendix A) were designed to call for purely subjective answers. Interestingly enough, several instructors made similar comments concerning the Oklahoma Fire Protection School and fire schools

in general.

Listed below are points made by past and present department heads and instructors of the School of Fire Protection Technology, Stillwater, Oklahoma:

1. A bachelor of Science Degree is needed in Fire Protection Technology to compete in industry. (2) (18) (22) (23)
2. A larger operating budget (larger than $3,000/year) is needed at the Oklahoma State University Fire Protection School to insure proper instruction and laboratory facilities. (2) (5) (16) (18)
3. A full time man is needed in any Fire Protection school to build training aids and to build and maintain laboratory equipment. This would free the instructors for course development and adequate lesson preparation. (2) (5) (23)
4. An advisory committee is needed for any fire protection program. (2) (5) (23)
5. The past graduates of the Oklahoma State University Fire Protection School were used extensively as an advisory committee. (2) (5) (22)(23)
6. Fire equipment manufacturing companies were used somewhat as an advisory committee. (2) (23)

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to document the historical development of a fire protection technology program and analyze this program's historical development to determine implications for program planning. The procedure used was to examine, analyze, and record the historical development of the Fire Protection Technology program at Oklahoma State University to determine implications for program planning. Special attention was given to the school's changing objectives, curriculum development, graduate occupations, and teaching staff. Oklahoma's School of Fire Protection Technology, established in 1937, is the oldest surviving fire school in the United States that offers a two year Associate Degree. The development of this surviving school is important to present day educators. A study of this kind will benefit Fire Protection Technology program planners, the administrators of these newly developing programs, advisory committees associated with the fire program, and beginning Fire Protection instructors.

Summary

The Fire Protection Technology program was first established in 1937 as a result of interested Oklahomans getting together to resolve the problem of training municipal fire fighters. Mr. W. Fred Heisler became interested in the fireman's problem and helped found the program in Firemanship Training. Mr. R. J. Douglas, the real developer of the program, was hired in January, 1938.

The Firemanship Training program, as it was then called, was first designed to train students to become firemen. However, due to higher salaries offered by insurance companies and industries, very few of the graduates entered municipal fire suppression. Only about one-third of the graduates of the first two classes went into fire department work. In later graduating classes even less went into municipal fire protection.

During World War II, the school operated at a substandard level. No accredited fire courses were offered. The school was used as a center for the nation's fire protection activities. Leading figures in the field of fire protection congregated at the Fire School to exchange ideas and help present short courses to such groups as volunteer firemen, industrial fire brigades, and civilian defence people.

After the war the school again began to function properly under the leadership of Mr. R. J. Douglas. At this time, the majority of graduates began entering the insurance field as inspectors. In 1948 a curriculum change emphasized the objective of training insurance inspectors. Later during the 1960's the graduates initial occupation began to shift more heavily toward the industrial fire protection field. In 1963 a second major curriculum change introduced more industrial fire protection courses and eliminated the old practice courses that were designed to train fire fighters. A general statement concerning the school's objectives would suggest a trend from firemanship training (1938) to insurance inspection training (1948) to industrial fire protection (1963). Keep in mind that during any period in the school's history graduates entered all of the main job fields indicated above.

A total of two hundred and ninety-six students have graduated from 1938 to the present. The majority of these graduates (approximately 50%) are working in the insurance field. Approximately 20% are working in industry and approximately 10% are working in the fire service -- in fire departments or as state fire instructors. A few graduates are working in other fields.

The teaching staff during the school's history has included some exceptional people. The founder of the school,

W. Fred Heisler, held a Master's Degree. In fact, Mr. Heisler's Master's thesis was used as the basis for the formation of the school of technical training in which the firemanship training course was established. The real developer of the fire program, Mr. R. J. Douglas, was a very capable man holding a Master's Degree. All other department heads and instructors with the exception of two have had excellent academic backgrounds, holding at least a Bachelor's Degree if not a Master's Degree. It is interesting to note that the majority of the instructors were past graduates of the Fire Protection School.

When analyzing the history of the fire program it can be seen that many trends of this school and many points made by past instructors can be used by present day fire program planners and administrators. The implications for program planning listed in this report will hopefully be of some benefit to the newly developing fire protection programs.

Conclusions

An analysis of the historical development of the Fire Protection Technology Program at Oklahoma State University shows many implications for program planning. The program was the result of interested Oklahomans pushing a college level training program for fire fighters. During the history of the program a shift from Firemanship Training to

insurance inspection training to industrial fire protection can be seen. The curriculum of the program has shifted from the manual skill and practice courses to a more theoretical sophisticated type of fire protection program. Higher salaries offered by insurance companies and industries have caused the majority of the past graduates to enter these fields. Only about 10% of the 296 graduates have taken jobs in fire departments or as state fire instructors. The teaching staff throughout the school's history has had very high academic backgrounds. Many of the department heads and instructors have held Master's Degrees. Further study in this area is needed before additional conclusions are possible.

General Recommendations

1. It is recommended that studies of this nature be considered as supplementary material by fire program planners, administrators, and instructors when initiating and developing a program in fire protection technology.
2. It is recommended that further studies be made concerning historical development of other college level fire protection programs in the United States or in foreign countries.
3. It is recommended that all new students entering Oklahoma State University's School of Fire Protection Tech-

nology read studies of this nature to better understand the fire program in which they are studying.

4. It is recommended that further studies be made concerning any of the various aspects of Oklahoma's School of Fire Protection Technology.

Specific Recommendations for Newly Developing Fire Programs

From a careful examination of the historical development of the School of Fire Protection Technology, Oklahoma State University, several recommendations for the newly developing fire program will be mentioned. These recommendations have been based around the historical development of Oklahoma's Fire Protection School only and warrants this consideration when being reviewed by program planners.

1. Locate the fire program on or near a large college or university.
2. Design the curriculum to be transferable to a four year college. Initiate a method by which the two year fire protection graduate can seek a Bachelor's Degree by two additional years of study.
3. Build special fire protection training facilities or designate a building or room, on the college grounds, to the fire protection department. This will give the students the opportunity to identify with the fire program's physical facilities.

4. Design the program's objectives and curricula so that the student is prepared for a cluster of fire protection occupations. Do not design a program that limits the student to one specific area of fire protection, such as municipal fire departments.
5. Hire instructors who have at least a Bachelor's Degree preferably with an academic background in fire protection.
6. Use an advisory committee for recommendations only. The advisory committee should be made up of people with backgrounds in different areas of fire protection, such as industry, insurance, and fire departments. Also, use the feedback of past graduates. This proved quite successful at the Oklahoma Fire Protection School.
7. The college level fire protection courses should stress theoretical knowledge. Laboratory exercises should be designed to supplement classroom learning. Manual skills relating to one specialty of fire protection, i.e., raising a ladder, should not be included. Firemanship skills (manual skills) are below college level and should be taught by state instructors or fire department training officers.

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APPENDIX A

INTERVIEW SCHEDULE

1. What was (is) your position in the Oklahoma State University School of Fire Protection Technology?

2. What was your experience prior to employment at the Fire School? (Academic and Other)

3. During what period were you associated with the Fire Program? Give dates.

4. Briefly trace the development of the program as you saw it.

5. What major changes in the program did you witness? Explain.

6. What were the objectives of the program when you were active?

7. Were the objectives changed at any time in the history of the Fire School? When? Why?

8. Did the curriculum of the school change when you were active? When? Why?

10. During your active period with the School, did the program ever need an advisory committee? When? Why?

11. Where can I find material regarding the history of the Fire School?

12. What was your overall personal feelings regarding the School including the objectives and curriculum design?

13. How could the School have been improved?

14. What suggestions would you make for the newly developing fire schools?

APPENDIX B

PAST CURRICULA

FIREMANSHIP TRAINING - 1938*

First Year

		I			II	
	T	L	C	T	L	C
English 113, Freshman English	3	0	3	-	-	-
English Elective	-	-	-	3	0	3
Math. 133, Industrial Algebra	3	0	3	-	-	-
Math. 132, Trigonometry for Technicians	-	-	-	2	0	2
Chem. 114, General Chemistry	3	3	4	-	-	-
Phys. 114, Mechanics and Heat	-	-	-	3	3	4
M. E. 112, Engineering Drawing	0	6	2	-	-	-
Shop 111, Shop Woodwork	0	3	1	-	-	-
Shop 241, Forging & Heat Treat. of Metals	0	3	1	-	-	-
Shop 261, Machine Shop Practice	-	-	-	0	3	1
Shop 362, Oxy-Acetylene & Elec. Welding	-	-	-	1	3	2
Tech. 242, Automechanics	-	-	-	0	6	2
Tech. A 111, 121, Fire Fighting Practices	0	3	1	0	3	1
Tech. A 112, Fire Hazards and Fire Causes	1	3	2	-	-	-
Tech. A 122, Fire Protection	-	-	-	1	3	2
Engr. 110, 120, Engineering Lecture	1	0	0	1	0	0
Mil. Sci. 111, 121, Military Science	2	1	1	2	1	1
	13	22	18	13	22	18

*From July 1938 Oklahoma A & M College Catalogue. (6)

APPENDIX B (continued)

FIREMANSHIP TRAINING - 1938*

Second Year

	I			II		
	T	L	C	T	L	C
Physiol. 213, Elementary Physiology . . .	3	0	3	-	-	-
Phys. 124, Electricity, Sound & Light . .	3	3	4	-	-	-
Psych. 113, Psychology and Life	-	-	-	3	0	3
Chem. 124, General Chemistry	3	3	4	-	-	-
Chem. 283, Chemistry of Engin. Materials.	-	-	-	2	3	3
C. E. 293, Elementary Hydraulics.	-	-	-	2	3	3
Govt. 323, State & Municipal Gov't. . . .	-	-	-	3	0	3
Arch. 362, Materials of Build. Const. . .	-	-	-	2	0	2
Speech 202, Essentials of Public Speaking	-	-	-	2	0	2
Tech. 213, Essentials of Electricity. . .	2	3	3	-	-	-
Tech. A 212, Fire Prevention.	1	3	2	-	-	-
Tech. A 211, Fire Fighting Practices. . .	0	3	1	-	-	-
Tech. A 222, Fire Fighting Tactics. . . .	-	-	-	1	3	2
Mil. Sci. 211, 221, Military Science. . .	2	1	1	-	-	-
	14	16	18	17	10	19

*From July 1938 Oklahoma A & M College Catalogue. (6)

APPENDIX B (continued)

FIRE PROTECTION - 1949*

First Year

First Semester	Theory	Lab	Credit
Engl. 113, Freshman English	3	0	3
Math. 173, Algebra	3	0	3
Chem. 114, General Chemistry	3	3	4
M. E. 112, Engineering Drawing	0	6	2
Tech A 111, Fire Fighting Practices	0	3	1
Tech A 112, Fire Hazards and Causes	1	3	2
Tech A 102, Fire Extinguisher Installations Maintenance and Recharge	1	3	2
			17

Second Semester			
Engl. 203, English Composition	3	0	3
Chem. 124, General Chemistry	3	3	4
Math. 183, Plane Trigonometry	3	0	3
Tech A 121, Fire Fighting Practices	0	3	1
Tech A 122, Fire Protection	1	3	2
Psych. 213, Introductory Psychology	3	0	3
Tech A 132, Principles of Fire Department Inspection	1	3	2
			18

Second Year

First Semester			
Speech 202, Essential of Public Speaking	2	0	2
Phys. 114, Mechanics and Heat	3	3	4
Tech A 211, Fire Fighting Practices	0	3	1
Tech A 212, Fire Prevention	1	3	2
Tech A 232, Fire Dept. Inspection Practices	1	3	2
Tech AC 213, Air Conditioning Systems	3	0	3
B. A. 353, Property Insurance	3	0	3
			17

Second Semester			
Phys. 124, Electricity, Sound & Light	3	3	4
Shop 362, Oxy-Acetylene & Elec. Welding	1	3	2
Eng'g. 431, Safety Engineering	0	3	1
Tech A 292, Fire Department Hydraulics	1	3	2
Tech A 222, Fire Fighting Tactics	1	3	2
Tech 214, Essentials of Electricity	3	3	4
Tech A 242, Autom Sprinkler Protection	1	3	2
			17

*From May, 1949 Oklahoma A & M College Catalogue (6)

APPENDIX B (continued)

FIRE PROTECTION TECHNOLOGY - 1963*

First Year

First Semester		Theory	Lab	Credit
Tec. 113,	Technical Drawing.	1	6	3
Tec. 131,	Personal & Occup. Guidance . . .	1	0	1
TECA 102,	Fire Ext. & Alarm Systems. . . .	1	3	2
TECA 112,	Fire Hazards and Causes.	1	3	2
TECA 132,	Principles of Fire Inspection. .	1	3	2
Chem. 164,	General Chemistry.	3	3	4
Math. 173,	College Algebra.	3	0	3
				17
Second Semester				
TECA 122,	Fire Protection.	1	3	2
TECA 162,	Fire Codes & Standards	1	3	2
TECA 182,	Industrial Fire Hazards.	1	3	2
Engl. 1T3,	Basic Writing Skills	3	0	3
Chem. 174,	General Chemistry.	3	3	4
Math. 183,	Trigonometry	3	0	3
				16

Second Year

Third Semester				
TECA 242,	Automatic Sprinklers.	1	3	2
TECA 272,	Fire Protection Hydraulics. . .	1	3	2
Phys. 114,	Mechanics, Heat & Sound	3	3	4
Genbus 303,	General Insurance	3	0	3
Speech 202,	Public Speaking	2	0	2
Soc.Sc. 114,	Challenges in American Democratic Life	4	0	4
				17
Fourth Semester				
Tec. 242,	American Industrial Development	2	0	2TECA
TECA 232,	Fire Inspection Practices . . .	1	3	2
TECA 282,	Water Supply Analysis	1	3	2
Phys. 124,	Electricity and Light	3	3	4
Chem. 263,	Organic Chemistry	2	3	3
Genbus 353,	Fire and Marine Insurance . . .	3	0	3
Inden 332,	Industrial Safety Engineering .	2	0	2
				18

*From 1963-65 Oklahoma State University College Catalogue (6)

APPENDIX B (continued)

FIRE PROTECTION TECHNOLOGY - 1967*

First Year

First Semester		Credit
Tec.	1215, Technical Mathematics.	5
Tec. A	1212, Fire Hazards and Causes.	2
Tec. B	1114, Elements of Construction, Plan Reading and Sketching.	4
Chem.	1364, General Chemistry.	4
Tec. A	1322, Municipal Fire Protection.	2
		17

Second Semester		
Tec.	1931, Personal & Occupational Guidance	1
Tec.	1253, Basic Electricity, Codes & Inspections .	3
Tec.	2542, American Industrial Development.	2
Tec. A	1102, Fire Extinguishing & Alarm Systems . . .	2
Tec. A	1682, Industrial Fire Hazards.	2
Engl.	1113, Freshman Composition	3
Chem.	1474, General Chemistry.	4
		17

Second Year

Third Semester		
Tec. A	2372, Fire Protection Hydraulics	2
Tec. A	2242, Automatic Sprinklers	2
Engl.	1323, Freshman Composition	3
Genbu.	3013, General Insurance.	3
Soc.Sc.	1114, Challenges in American Democratic Life .	4
Tec. A	2143, Structural Fire Protection	3
		17

Fourth Semester		
Tec.	1424, Applied Physics	4
Tec. A	2482, Water Supply Analysis	2
Speech	2713, Introduction to Public Speaking	3
Gen. Bu	3253, Property and Casualty Insurance	3
Tec. A	2153, Fire Protection Applications.	3
In. Eng.	3332, Industrial Safety Engineering	2
		17

*From 1967-68 Oklahoma State University College Catalogue (6)

APPENDIX C

COURSE DESCRIPTIONS

FIRE PROTECTION - 1949*

TECH A

102 **FIRE EXTINGUISHER INSTALLATION, MAINTENANCE, AND RECHARGE.** Class 1, lab 3, credits 2. Practice in installing, marking, overhauling, cleaning, adjusting, and recharging the various types and makes of approved fire extinguishers. - Mr. Douglas.

111 **FIRE FIGHTING PRACTICES.** Lab 3, credits 1. Actual drills with modern equipment at a modern fire station in hose and ladder work, forcible entry, salvage and overhaul, operation of apparatus and rescue and first aid. - Mr. Buck.

112 **FIRE HAZARDS AND CAUSES.** Class 1, lab 3, credits 2. A study of the cause of fires in cities, rural areas, homes and in industry. The application of the basic principles of fire protection to eliminate or control fire hazards. - Mr. Douglas.

121 **FIRE FIGHTING PRACTICES.** Lab 3, credit 1. A continuation of Tech A 111, - Mr. Buck.

122 **FIRE PROTECTION.** Class 1, lab 3, credit 2. A study of modern fire protection including city water supply and distribution, fire department organization, housing, equipment and personnel, private fire protection methods, chemical extinguishment, building construction for protection and methods of administration and co-operation in fire protection. - Mr. Buck.

*From February, 1954 Oklahoma A & M College Catalogue (6)

APPENDIX C (continued)

TECH A

132 PRINCIPLES OF FIRE INSPECTION. Class 1, lab 3, credit 2, A study of inspection organization, stand symbols, inspection maps, diagrams and sketches, inspection forms and check-lists, inspection reports and records. Codes, laws and ordinances relating to inspection are studied and the National Board of Fire Underwriter's standards are reviewed. - Mr. Douglas.

211 FIRE FIGHTING PRACTICES. Lab 3, credit 1. Continuation of Tech. A 121. - Mr. Buck.

212 FIRE PREVENTION. Class 1, lab 3, credit 2. A study of fire prevention organization and practice in the development of a continuous fire prevention and educational program to promote public fire and safety consciousness. Mr. Douglas.

222 FIRE FIGHTING TACTICS. Class 1, lab 3, credits 2. A study of and practice in the sequence of operation, major and minor, necessitated in fighting all types of fires, and the art of using the entire force and available help effectively. The controlling purpose of the course is to train men to use their minds in working under emergencies. To do this effectively, they must be taught to fight fires and meet emergencies before they happen. - Mr. Buck.

232 FIRE INSPECTION PRACTICES. Class 1, lab 3, credit 2. Prerequisite: Tech A 132. Actual inspection of buildings to locate high value stocks, to man traps, to secure best means of entrance and to check exits and fire protective equipment. Complete reports, including maps and sketches required for each building inspected. Mr. Douglas.

242 AUTOMATIC SPRINKLER PROTECTION. Class 1, lab 3, credit 2. A practical analysis of N.F.P.A. sprinkler installation code covering in detail types of systems, spacing of lines, heads and hangers; heat actuating devices, accelators and exhausters; water supply; and sprinkler maintenance. - Mr. Buck.

APPENDIX C (continued)

TECH. A

292 FIRE PROTECTION HYDRAULICS. Class 1, lab 3, credit 2. Prerequisite: Math 183. A study of the mechanics of liquids flowing in water mains, hydrants, pumps, standpipes, hose, nozzles, and sprinkler systems. - Mr. Douglas.

FIRE PROTECTION TECHNOLOGY - 1963*

TECH. A

102 FIRE EXTINGUISHING AND ALARM SYSTEMS. Class 1, lab 3, credits 2. A study of the various types of fixed and portable fire extinguishers and fire detection and alarm systems.

112 FIRE HAZARDS AND CAUSES. Class 1, lab 3, credits 2. A study of the causes of fires in cities, rural areas, home, and industry. The application of the basic principles of fire protection to eliminate or control fire hazards.

122 FIRE PROTECTION. Class 1, lab 3, credits 2. A study of modern fire protection including city water supply and distribution, fire department organization, housing, equipment and personnel, private fire protection methods, chemical extinguishment, building construction for protection, and methods of administration and cooperation in fire protection.

132 PRINCIPLES OF FIRE INSPECTION. Class 1, lab 3, credits 2. A study of inspection organization standard symbols, inspection maps, and inspection reports. Building construction and the National Building Code are studied in detail.

162 FIRE CODES AND STANDARDS. Class 1, lab 3, credits 2. A survey of the Fire Codes and Standards developed by the National Fire Protection Association. The Fire Prevention Code of the National Board of Fire Underwriters is covered completely.

*From 1965-67 Oklahoma State University College Catalogue (6)

APPENDIX C (continued)

TECH A

182 INDUSTRIAL FIRE HAZARDS. Class 1, lab 3, credits 2. Prerequisite: Tech. A 112. Control measure to protect personnel and property from hazards due to boilers, industrial ovens, plastics, radioactive materials, and other industrial equipment, materials, and processes.

232 FIRE INSPECTION PRACTICES. Class 1, lab 3, credits 2. Prerequisite: Tech. A 132. Actual inspection of buildings to locate high value stocks and man traps, to secure best means of entrance to check exits and fire protection equipment. Complete records, including maps and sketches, are required for each building inspected.

242 AUTOMATIC SPRINKLERS. Class 1, lab 3, credits 2. Prerequisite: Tec. 115. A practical analysis of the National Fire Protection Association sprinkler installation code covering in detail types of systems, spacing of lines, heads and hangers, heat actuating devices, accelerators and exhausters, water supply, and sprinkler maintenance.

272 FIRE PROTECTION HYDRAULICS. Class 1, lab 3, credits 2. Prerequisite: Tec. 115. A study of the mechanics of liquids flowing in water mains, hydrants, pumps, standpipes, hose, nozzles, and sprinkler systems.

282 WATER SUPPLY ANALYSIS. Class 1, lab 3, credits 2. Prerequisite: Tech. A 272. A study of water supply requirements for fire protection and methods of determining quantities of water available from distribution systems.

FIRE PROTECTION TECHNOLOGY - 1967*

TECH. A

1102-102 FIRE EXTINGUISHING AND ALARM SYSTEMS. Class 1, lab 3, credits 2. A study of the various types of fixed and portable fire extinguishers and fire detection and alarm systems.

*From 1968-69 Oklahoma State University College Catalogue (6)

APPENDIX C (continued)

TECH A

1212-112 FIRE HAZARDS AND CAUSES. Class 1, lab 3, credits 2. A study of the causes of fires in cities, rural areas, home, and industry. The application of the basic principles of fire protection to eliminate or control fire hazards.

1322-122 MUNICIPAL FIRE PROTECTION. Class 1, lab 3, credits 2. A study of fire department organizations and other factors contained in an appraisal of public fire defense in a municipality. The American Insurance Association grading schedule for evaluation of public fire defenses will be studied in detail.

1682-182 INDUSTRIAL FIRE HAZARDS. Class 1, lab 3, credits 2. Prerequisite: 1212. A study of hazards commonly found in industry such as painting operations, dip tanks, ovens, and furnaces. Methods of eliminating and controlling these hazards will be presented.

2143 STRUCTURAL FIRE PROTECTION. Class 3, credits 3. Prerequisite: TECB 1114. A study of building construction as applied to fire protection. A major emphasis will be placed on fire resistance ratings and their methods of determination. Also covered will be the National Building Code and the drawing of diagrams of buildings.

2153 FIRE PROTECTION APPLICATION. Class 2, lab 3, credits 3. Prerequisite: prior or concurrent enrollment in all other fire protection courses. This course requires total fire protection analysis of industrial locations. The students will use material obtained in his previous course work to analyze and make a report upon different buildings and occupancies. Fire inspection techniques will be studied. The Fire Prevention Code will also be presented.

APPENDIX c (continued)

TECH A

2343-242 AUTOMATIC SPRINKLERS. Class 1, lab 3, credits 2. Prerequisite: TEC 1215. A practical analysis of the National Fire Protection Association Sprinkler installation code covering in detail types of systems, spacing of lines, heads and hangers, heat actuating devices, accelerators and exhausters, water supply, and sprinkler maintenance.

2372-272 FIRE PROTECTION HYDRAULICS. Class 1, lab 3, credits 2. Prerequisite: TEC 1215. A study of the mechanics of liquids flowing in water mains, hydrants, pumps, standpipes, hose, nozzles, and sprinkler systems.

2482-282 WATER SUPPLY ANALYSIS. Class 1, lab 3, credits 2. Prerequisites: 1322 and 2372. A study of water supply requirements for fire protection and methods for analyzing a water system for suitability from a fire protection standpoint. The water supply section of the grading schedule will be covered.

VITA

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THOMAS WILLIAM DAWSON

Candidate for the Degree of

Master of Science

Thesis: AN ANALYSIS OF THE HISTORICAL DEVELOPMENT OF A FIRE PROTECTION TECHNOLOGY PROGRAM WITH IMPLICATIONS FOR PROGRAM PLANNING

Major Field: Technical Education

Biographical:

Personal Data: Born in Yuba City, California, May 21, 1942, the son of William R. and Alice E. Dawson.

Education: Received an Associate of Arts Degree with a major in Social Science from Yuba College, Marysville, California, in June, 1966; received an Associate Degree with a major in Fire Protection Technology from Oklahoma State University, Stillwater, Oklahoma, in May, 1966; received the Bachelor of Science Degree from Oklahoma State University with a major in Technical Education, in May, 1968; completed requirements for the Master of Science Degree at Oklahoma State University, in May, 1970.

Professional Experience: Worked as a full-time Fireman-Driver for a total of one year with the Yuba City Fire Department, California. Worked as a volunteer fire fighter for a total of four years with the Stillwater Fire Department, Oklahoma.