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AN ORGANIZATIONAL HISTORY OF AIR FORCE FIRE PROTECTION

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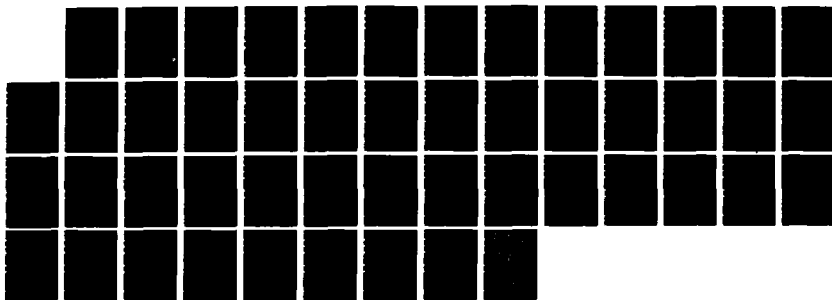
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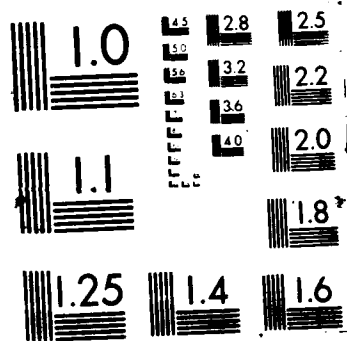
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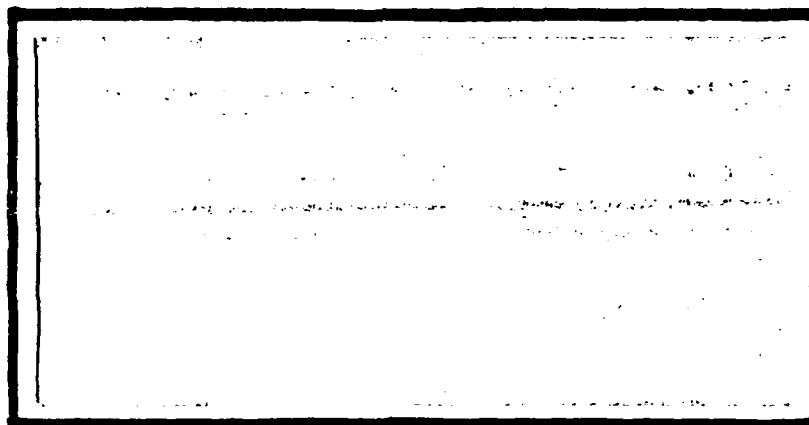
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AN ORGANIZATIONAL HISTORY OF
AIR FORCE FIRE PROTECTION
THESIS

Joe G. Ballard
Captain, USAF

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AN ORGANIZATIONAL HISTORY OF AIR FORCE FIRE PROTECTION

THESIS

Presented to the Faculty of the
School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Engineering Management

Joe G. Ballard

Captain, USAF

September 1987

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Joe G. Ballard

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Abstract

The objective of this research was to present the organizational history of Air Force fire protection from the end of World War II to the present time. The research focused on identifying the significant changes which have taken place during that time period and, if possible, explaining why those changes were made.

The study found that the external and internal organizational structures of Air Force fire protection have not dramatically changed since the end of World War II. The fire protection branch has always worked for the officer in charge of real property, and, ultimately, the Base Commander. There were several external reorganizations involving the fire protection branch in the years immediately preceding the creation of the Air Force. However, most of the significant external organizational changes since that time have resulted from name changes. The only two significant internal organizational changes which have taken place during this time have been the addition of an Assistant Chief for Training and a reanalysis of the role of the Deputy Fire Chief.

Further research is recommended for the study of the evolution and effectiveness of Air Force fire fighting equipment and vehicles.

AN ORGANIZATIONAL HISTORY OF AIR FORCE FIRE PROTECTION

I. Problem Statement

Background

Doctrine is fundamental to any military organization. Air Force Manual 1-1 defines doctrine as, "the best way to employ military forces to achieve objectives" (2:1-1). While this manual provides guidance for the Air Force as a whole, it does not give specific doctrinal guidance for the separate functional areas which comprise the total force. The Air Force Engineering and Services functional area is no exception. Currently, the Engineering and Services functional area has no formal doctrine of its own.

Doctrine has been recently addressed in several reports. Colonel Arthur Kishiyama, former Chief, Plans Division, Directorate of Engineering and Services, Headquarters United States Air Force (HQ USAF), states the need for formal Air Force Civil Engineering doctrine as the foundation for properly equipping, training, organizing, and employing forces in his Air War College report, The Relevance of Doctrine to Air Force Civil Engineering (17:3). Major Alfred Hicks of the Plans Division, Directorate of Engineering and Services, HQ USAF further states that "the primary source of CE doctrine [is] CE history" (6:1). Under Major Hicks' direction, HQ USAF Engineering and Services

personnel are currently working on a formal Civil Engineering doctrine. They are retracing the history of Air Force Engineering and Services, from its beginnings as part of the Army Air Force to the present USAF functional area. By studying the history of Engineering and Services and its effectiveness over the years in support of the Air Force mission, they hope to identify common threads of policy upon which to build this formal doctrine.

Retracing the history of Air Force Engineering and Services is a monumental task because of the enormous amount of information which must be gathered and organized. HQ USAF Engineering and Services personnel have divided the research effort into several categories to expedite information gathering. These areas include, but are not limited to, Prime Base Engineer Emergency Force (BEEF), Rapid Engineer Deployable Heavy Operation Repair Squadron Engineers (RED HORSE), fire protection, and services. Even dividing the research into these more manageable categories does not reduce the total amount of research time that must be spent to adequately cover the relevant information. Therefore, HQ USAF Engineering and Services personnel are soliciting research assistance from several agencies, including graduate students at the Air Force Institute of Technology (AFIT) at Wright-Patterson AFB, Ohio (7). HQ USAF Engineering and Services personnel visited AFIT in November 1986 and talked with several students in the

Graduate Engineering Management (GEM) Program about assistance with this research effort in the areas of Prime BEEF, RED HORSE and fire protection. This researcher was given the opportunity to assist by tracing the organizational history of Air Force fire protection.

Specific Research Question

The goal of this research effort was to assist in the formulation of formal doctrine for the Air Force Engineering and Services functional area. The specific research question:

What changes have taken place in the organizational structure of Air Force fire protection since the end of World War II, and why were those changes made?

Investigative Questions

Several investigative questions must be answered before the research question can be completely addressed. These include:

1. What is the mission of USAF fire protection? Has that mission changed since the end of World War II? If so, how has it changed and why were those mission changes made?
2. How was the fire protection branch organized at the end of World War II? Why was it organized that way?
3. What organizational changes have been made in the fire protection branch since the end of World War II? Why were those changes made?

Methodology

The general method of research was survey. Data was collected in the form of literature, historical records, and personal interviews. This research was not meant to create new data or make any new discoveries in the world of Air Force fire protection. Rather, the intent was to simply collect information that was available, organize that information, analyze it for significant organizational changes in fire protection, and explain why those changes occurred.

Before the research could be considered complete, the following steps were taken:

1. An extensive literature search and review was performed. All local library sources were checked for pertinent literature. In addition, a Defense Technical Information Center (DTIC) search was accomplished, and all applicable literature ordered and reviewed.

2. All applicable historical records were reviewed. Historical records from Headquarters Air Force Engineering and Services Center (HQ AFESC) at Tyndall Air Force Base (AFB), Florida, the Simpson Historical Center at Maxwell AFB, Alabama, the Air Force Museum Research Office at Wright-Patterson AFB, Ohio, the Ogden Air Logistics Center (ALC) history office at Hill AFB, Utah, and the Oklahoma City ALC history office at Tinker AFB, Oklahoma were received and reviewed. Several other ALC history offices

were contacted, as well as several Major Command Headquarters history offices, but none of these offices provided information.

3. Several key personnel were interviewed, including Mr. Doug Knowles, the HQ AFESC Fire Protection Specialist, and his staff. These interviews provided insight on past and present fire protection organizational structures. They contributed personal historical data and expounded on recorded data.

4. When all possible data had been gathered and the interviews were completed, the data was chronologically organized. Each organizational change made in fire protection through the years was examined to determine possible reasons for the change. In some instances, the reasons for an organizational change were known and were so stated. If the reasons for the change were not known, possible explanations were offered based on the information contained in the literature and research performed.

The heart of this research was the review of existing data. No questionnaire was sent out or other type of answer related survey conducted. Since there was no new data generated, there was no need for complex statistical analysis on the data.

Limitations

This entire research project was dependent on the availability of pertinent literature, historical records,

and the key personnel to be interviewed. After a thorough search of historical records and several personal interviews, it was apparent that very little information has been printed on the organizational history of Air Force Fire Protection. Some information was available from the individual ALC archives, but the majority of information came from the interviews conducted at the HQ AFESC. The information that was available in the literature, for the most part, was not accompanied by an explanation as to why organizational changes were made. Consequently, most of the analysis was speculative rather than exact.

Presentation of the Research

This chapter has been devoted to presenting the research problem and the methodology to be used in answering the research question.

Chapter two presents the data collected and discusses the organizational history of Air Force fire protection. Additionally, significant organizational changes are addressed. Finally, research conclusions and recommendations for further research in Air Force fire protection are addressed in chapter three.

II. The History of Air Force Fire Protection

Introduction

The seeds for the organizational structure of the fire protection branch were sown during World War II in the framework of the U.S. Army Air Force. On 18 September 1947, shortly after the end of World War II, the U.S. Air Force was formally separated from the U.S. Army. Since 1947 the organizational structure of the fire protection branch has undergone only a few major changes. However, the organizational structure has always had unique characteristics at different bases. Because not all bases share exactly the same organizational structure, the organizational structures presented in this research are generic in nature and not inclusive of all the peculiarities which have existed (and still exist) at individual bases.

After conducting a thorough literature search, this researcher concluded that the organizational structure of USAF fire protection logically divides into three distinct periods (or eras) of time. This chapter focuses on the mission of USAF fire protection and on these three eras of organizational structure: (1) the pre-Air Force era (1942-47), (2) the Air Installation Officer era (1947-59), and (3) the present era (1959-present).

The Mission of USAF Fire Protection

The mission of USAF fire protection is clearly stated in Air Force Regulation 92-1. The Air Force "requires a continuous, aggressive fire protection program" in all activities (1:2). According to Air Force Regulation 92-1, the term fire protection includes "all aspects of fire protection engineering, fire prevention, and firefighting and aircraft rescue operations" (3:2). The requirements of the fire protection branch are quite clear - protect all government resources (including personnel) from damage by fire and continuously work toward fire prevention.

The Pre-Air Force Era (1942-47)

There was very little information available on the organizational structure of USAF fire protection in the Army Air Force. The information gathered was available from units who supplied unit histories for this time period. Most of the information gathered from individual bases focused on specific fires which caused major damage to that particular base. There was very little information on the organizational history of the fire protection branch. Consequently, almost all of the information on the organizational history of fire protection before the creation of the U.S. Air Force came from unit histories supplied by the Oklahoma City ALC history office and the Ogden ALC history office.

External Organization. In the early days of World War II, the job of Fire Marshal was one of several jobs held by a single person. The Fire Marshal was responsible for organizing and maintaining a fire protection section. As the war progressed, the Fire Marshal became a separate entity in the organizational command structure of the Intelligence Office. By the end of the war, the Fire Marshal and the fire protection section were in the organizational command structure of the newly created Air Installations Division. It all began with one person.

One Person Operation. In 1942, the Oklahoma City Air Technical Service Command (OCATSC) had only one person assigned as Intelligence Officer, Plant Protection Officer, Provost Marshal, and Fire Marshal (15:10). Within a few months, however, the job of Fire Marshal was given to an Assistant Plant Protection Officer and Assistant Provost Marshal (15:10). Fire protection did not seem to be an important function at the OCATSC since the job was treated as an additional duty. Later in 1942, the fire protection branch at the OCATSC was placed strictly under the Provost Marshal branch (16:15). At that time, both the Intelligence Officer and the Provost Marshal served in a liaison capacity to the Base Commander (sometimes called the Installation Commander) (15:10) (see Figure 1).

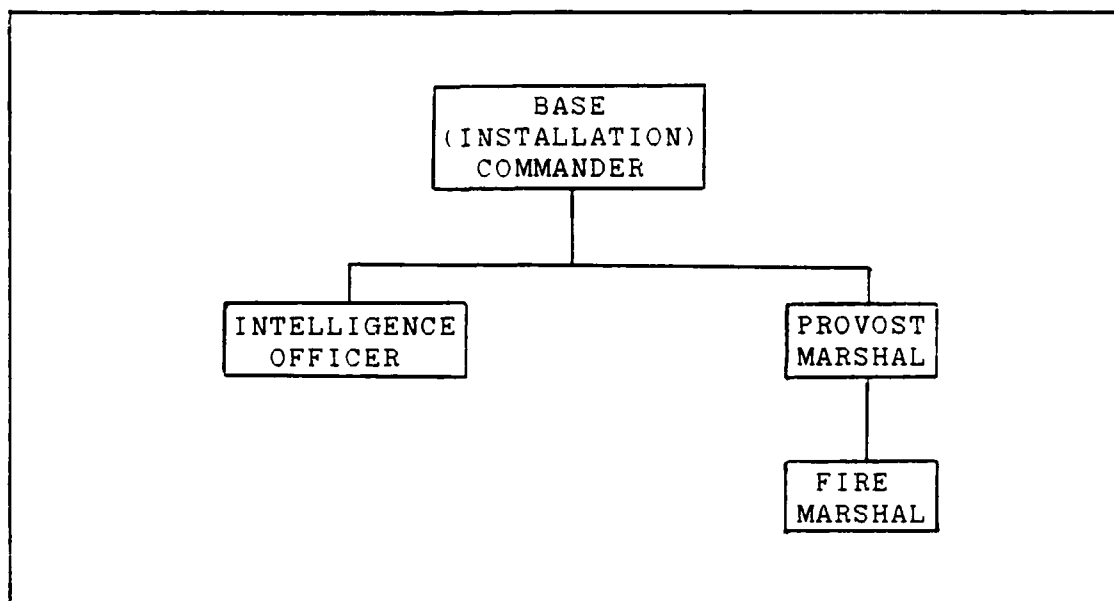


Figure 1. Fire Protection Organization in 1942.
(Source: Compiled from History of OCATSC: 1943)

Fire Protection Under Intelligence. In November 1944, the Provost Marshal branch was transferred to the Intelligence Office at HQ OCATSC (16:15). One person still served as both Intelligence Officer and Provost Marshal, but the job of Fire Marshal was assigned to a separate officer (16:16). The Fire Marshal was responsible for a fire protection section (16:16).

There are two likely explanations for fire protection falling under the Intelligence Office: (1) the ongoing program of research and development for technical ways to resolve the problem of cockpit fires in aircraft, and (2) the presence of some classified equipment in the cockpits of some of the aircraft used by the U.S. Army Air Force (18). Both explanations are merely speculation. This era does,

however, represent a crucial time in American history. The Allies were drawing closer to victory over Germany and Japan. Additionally, many technological breakthroughs were experienced during this time in weapon systems, such as the Norton bomb sight (18). It was probably determined that even fire fighters should be screened to protect the valuable military secrets of technology. One of the most practical ways to accomplish this screening process was to place the fire fighters under the overall organizational control of the Intelligence Officer. While the Fire Marshal and the Identification Section still reported directly to the Provost Marshal, the fire protection section remained under the overall jurisdiction of the Intelligence Office throughout the remainder of World War II (see Figure 2).

Fire Protection Under Air Installations. At the end of World War II, the fire protection section was moved to the Air Installations Division under the jurisdiction of the Deputy for Base Services T-6 (8:47). This research could not conclude whether the Deputy for Base Services T-6 was a unique position to the OCATSC or a position used Air Force wide. The mission of the Deputy for Base Services T-6 was to plan, establish policy, and execute established policy for organizations under his jurisdiction, and coordinate the activities of the Air Installations Division (8:47). The Air Installations Division at Oklahoma City Air

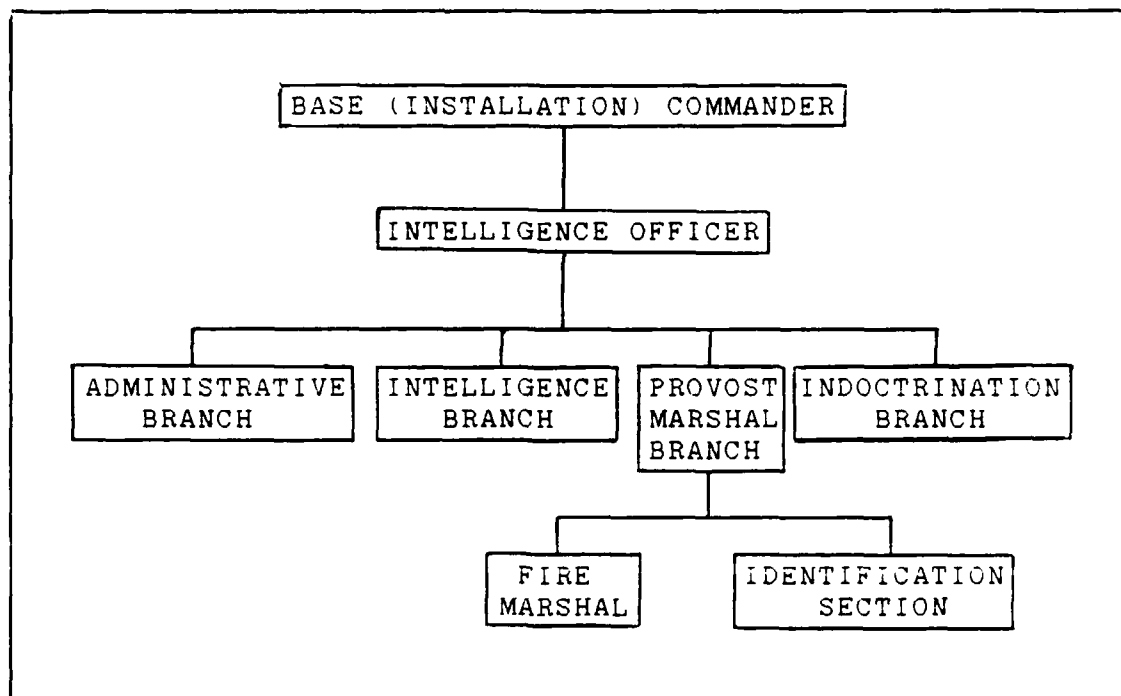


Figure 2. Fire Protection Organization in 1944.
 (Source: Compiled from History of OCATSC: 1944)

Material Area (OCAMA, the successor to OCATSC) consisted at that time of a "Control Section, Engineering Section, Post Engineer Section, Fire Prevention Section, and the Base Services Division" (see Figure 3) (8:47). (The name fire prevention section as opposed to fire protection section seems to be a unique name used by the OCAMA during this time period). By the end of fiscal year 1947, the Air Installations Division had been changed to the Air Installations Office, operating under the jurisdiction of the Deputy Commander for Administration (see Figure 4) (9:51). The literature did not conclude whether the Deputy Commander for Administration was another name for the Deputy

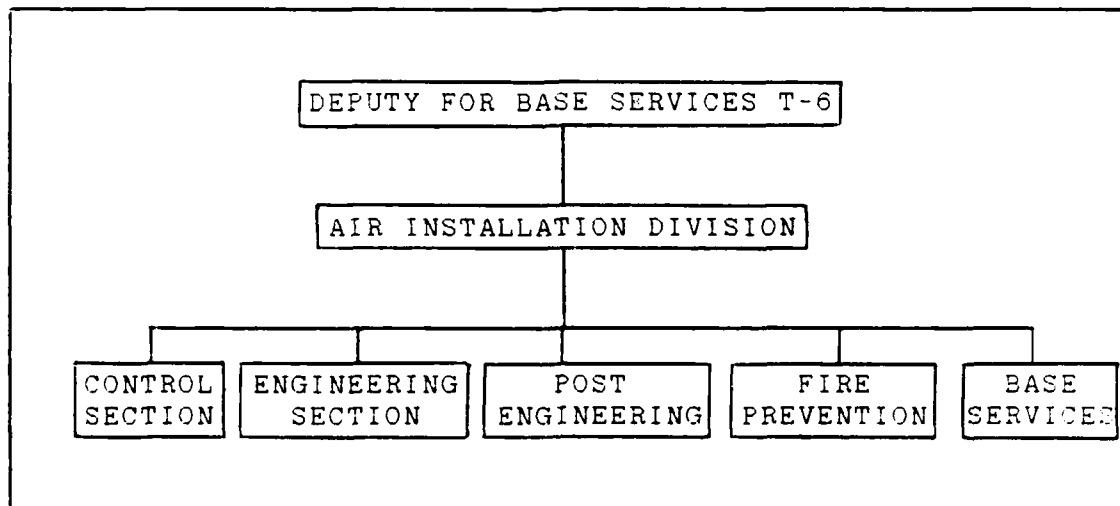


Figure 3. Fire Protection Organization in 1945.
 (Source: Compiled from History of OCAMA:
1 October-31 December 1947)

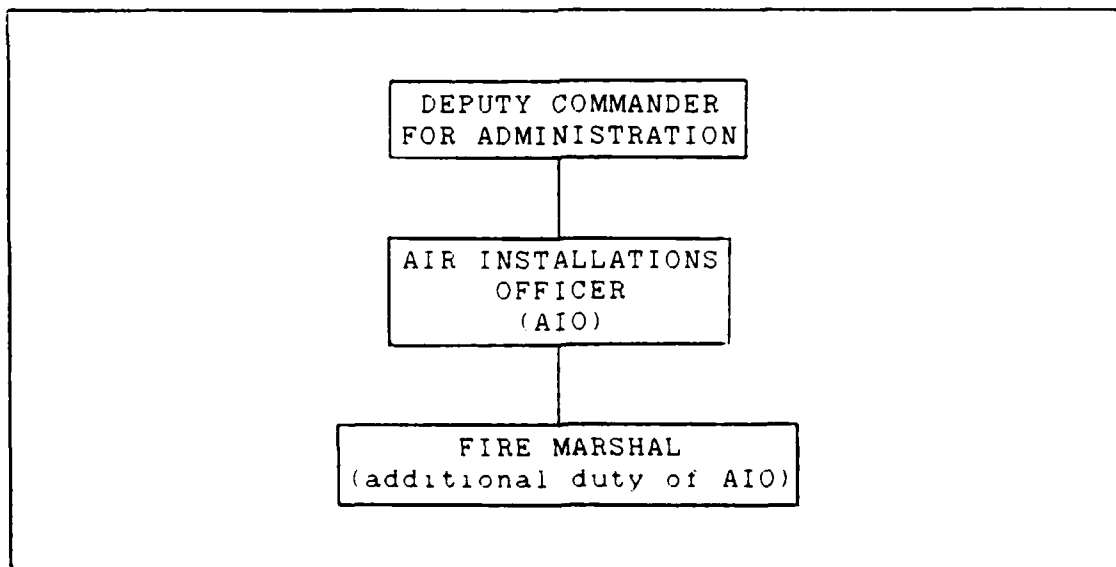


Figure 4. Fire Protection Organization in 1947.
 (Source: Compiled from History of OCAMA:
1 January-30 June 1947)

for Base Services T-6 or a separate position. This change was made as part of a service test of the plan for a Three Deputy Organization that the OCAMA was conducting (9:51). The Air Installations Officer (AIO) was responsible for the "procuring and maintenance of all buildings, structures, utilities, grounds, and related facilities" (9:51). The job of Fire Marshal was given to the AIO as an additional duty (9:51). That pattern has continued today with the Base Civil Engineer serving as Fire Marshal.

Internal Organization. Internally, at the end of World War II, the fire department was organized into three basic sections: the administrative section, the technical services/inspection section, and the operations section. The administrative section was responsible for all administrative functions. The technical services/inspection section was responsible for all base personnel education programs and for the inspection of base facilities. The operations section was responsible for providing fire protection to all base facilities and aircraft. Additionally, the operations section was organized into two separate organizational units known as structural fire fighters and crash fire fighters (18). All fire fighters were qualified as either structural fire fighters to fight fires on facilities or crash fire fighters, who were trained to fight aircraft crash fires and rescue crew members (20). There were two 12 hour shifts to provide 24 hour fire

protection. The A shift normally worked days and the B shift normally worked nights (18). In 1947, a possible merger of these two organizational sections into a "single fire fighting unit" was mentioned, but no action was taken (9:75). This merger finally occurred in the early 1950's with the introduction of the Air Force Specialty Code (18).

Summary. At the time the Air Force separated from the Army, the groundwork had been laid for the present organizational structure in fire protection. The fire protection section had changed from one of several additional duties held by a single person, to an additional duty within the Provost Marshal branch of the Intelligence Office, to a full section within the Air Installations Division under the Deputy for Base Services (later changed to the Air Installations Office under the Deputy for Administration). The creation of the Air Installations Office moved the fire protection branch into a whole new era.

The Air Installation Era (1947-59)

The fire protection section was moved under the command control of the Air Installations Officer (AIO) and the Deputy Commander for Administration in 1947 as part of a "Three Deputy Organization" at OCAMA (9:51). During the period between 1947 and 1959, the Air Installations Office would be shifted to another functional area and undergo two name changes.

External Organization. The OCAMA underwent two major organizational changes at the base level between 1947 and 1959. These changes resulted in two changes in the organizational structure of the fire protection section. The OCAMA adopted a "Two Directorate Plan" in 1948 and then the Wing-Base organizational concept in 1953. Both of these organizational changes affected fire protection.

Two Directorate Plan. The fire protection section stayed under the Deputy Commander for Administration for only a few months before the OCAMA changed to a "Two Directorate Plan" on 1 June 1948 (11:72). Under the "Two Directorate Plan", the fire protection section was moved from the organizational command of the Deputy Commander for Administration to the command of the Base Executive Officer (see Figure 5) (11:72). The literature implied that the Base Executive Officer was the Deputy Commander for Administration under a different name (11:72). The fire protection section name was also changed at this time to the fire protection and aircraft rescue section (11:72). The name "aircraft rescue" was probably added to reflect the heart of the USAF fire protection mission. Air Force fire fighters were (and still are) primarily responsible for protecting both facilities and aircraft from fire damage. The fire protection and aircraft rescue section hereafter

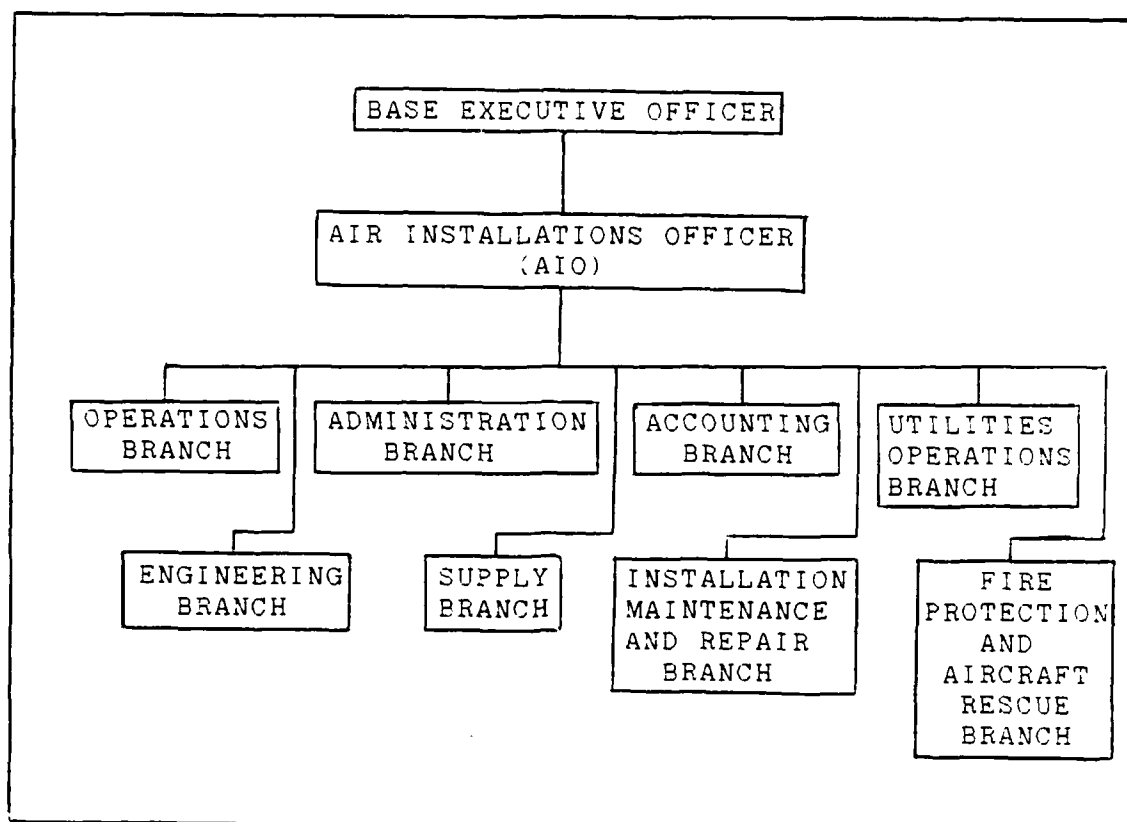


Figure 5. Fire Protection Organization in 1948.
 (Source: Compiled from History of OCAMA:
1 January-30 June 1948)

called the Section) began operating under an Area Unit Fire Marshal system under the "Two Directorate Plan" (13:149). Under this system, each area or unit on the base supplied a person to assist the Fire Marshal in promoting fire safety on the base and to accomplish periodic inspections of base facilities (12:102).

Wing-Base Organizational Concept. In 1953 the OCAMA formally adopted the Wing-Base organizational concept and the Base Executive Officer was renamed the Base

Commander (14:170). The AIO reported to the Base Commander, who reported to the Wing Commander of the installation (similar to most base organizational structures today). The Section, as part of the Air Installations Office, was still under the jurisdiction of the Base Commander. The Wing-Base concept amounted to a few name changes in the base level organizational structure, and did not directly affect the Section's actual command authority.

The Section did, however, have another name change in 1953. The name changed slightly to "fire protection and aircraft crash rescue" (10:68). The addition of the word "crash" was probably to emphasize one of the literal functions of fire fighters in support of their Air Force mission. The name more accurately reflected a large part of the mission of the Section.

Internal Organization. Internally, the Section was still organized much as before. There were still the three basic sections within fire protection: administration, operations, and technical services/inspection (see Figure 6) (18). However, a major change in personnel record keeping took place in the early 1950's with the advent of the Air Force Specialty Code.

Each unit within the operations section of fire protection was identified by a Military Occupational Specialty (MOS). Structural fire fighters carried an MOS of 383, while crash fire fighters carried an MOS of 1383 (18).

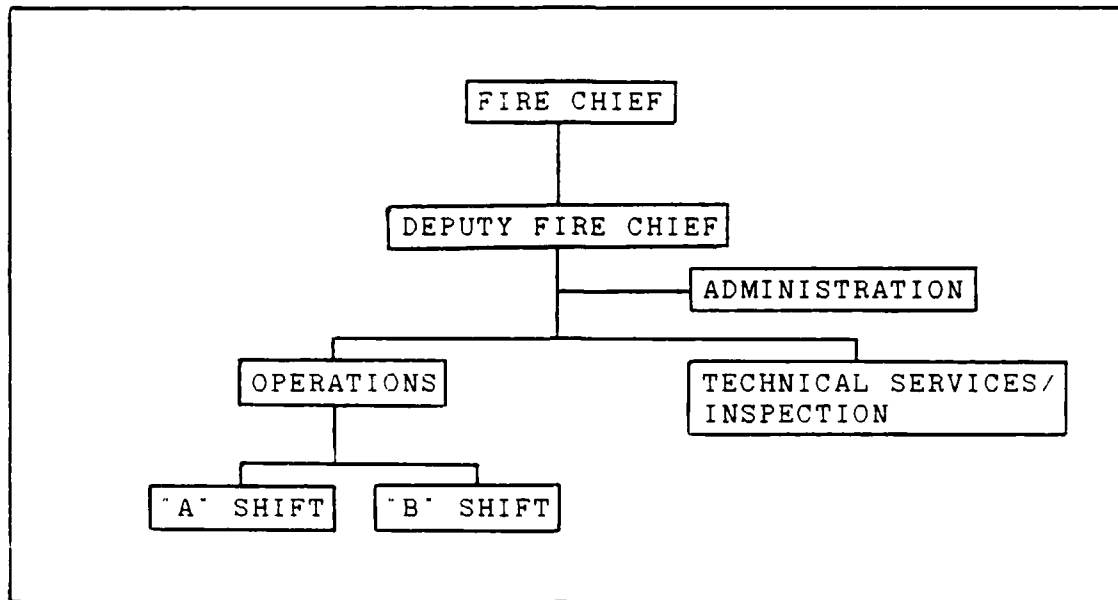


Figure 6. Internal Organization of Fire Protection in 1948.

(Source: Compiled from HQ AFESC Staff Interview, March 1987)

About the time the Wing-Base concept was introduced at the OCAMA in 1953, the Air Force began identifying job specialty codes with a new method. The old MOS's were discarded and replaced with the current Air Force Specialty Code (AFSC) (18). With the advent of the AFSC came the merger of the two different units within the fire protection operations section (18). The 1383 MOS and the 383 MOS were replaced by a single AFSC, "571XX", identifying both structural and crash fire fighters as simply fire fighters (18). The first three digits of the AFSC (571) identified the airman as a fire fighter. The last two digits (XX) reflected the skill level achieved by each fire fighter (18).

This merger probably came about for only one reason - simplicity. Although the Section still had both structural and crash fire fighters, the single AFSC eased the administrative burden. The Air Force reasoned that there would rarely be a need for structural and crash fire fighters simultaneously at a base, so they combined the two units to simplify paperwork (18).

Summary. The Air Installation Office era was a time when the organizational structure of the Section molded into almost the exact framework in use today. The OCAMA experimented with a few new base organizational structures during this time period. The Section was under the organizational control of the Deputy for Administration in the "Three Deputy Organization", but was under the Deputy for Base Services when the OCAMA changed to the "Two Directorate Plan" in 1948. Finally, about 1953, the OCAMA adopted the Wing-Base format and transferred the Air Installations Office (and the Section) to the jurisdiction of the Base Commander. Several internal changes also took place during this time. The official name of the Section changed from the "fire protection section," to the "fire protection and aircraft rescue section," then to the "fire protection and aircraft crash rescue section." The structural and crash units of the operations section were merged into one unit, and the two MOS's changed into one AFSC. Only one other major change occurred before today's

organizational structure took shape.

Present Era (1959-Present)

By 1959 the Section's organizational structure was almost exactly what it is today. The fire chief reported to the AIO (the Fire Marshal), who reported to the Base Commander. Only one other major change has been made to the external organizational structure of the Section since then, the name change to "Civil Engineering Squadron." However, the external organizational structure at the Major Command level seems to be inconsistent with the base level and the Air Staff level organizational structures. Internal organizational structure has changed several times since 1959, including the addition of an Assistant Chief for Training and the reanalysis of the role of the Deputy Fire Chief. The U.S. presence in Vietnam also impacted the organizational structure of the Section from the early 1960's to the mid-1970's, with the activation of flying fire fighting units called PEDRO units. This era of fire protection history began with the introduction of the name Civil Engineering Squadron.

External Organization. The last significant change to the Section occurred in March 1959. Air Force General Order 13 (dated 19 March 1959) redesignated the Air Installations Office as the Civil Engineering Squadron, effective 7 March 1959 (see Figure 7) (4:1). No specific reason was given for

the change, but two reasons have been speculated. First, most of the work accomplished by the Air Installations Office was Civil Engineering work (carpentry, plumbing, heating/cooling, roadwork, electrical, design, construction management, etc). While the mission of the AIO was basically to support and maintain facilities on air bases, the actual work done was civil engineering work. The name change more accurately defined the nature of the work which was being accomplished (18). Second, the name change was made to more accurately reflect the correct occupational title of the officers, airmen, and civilians who composed

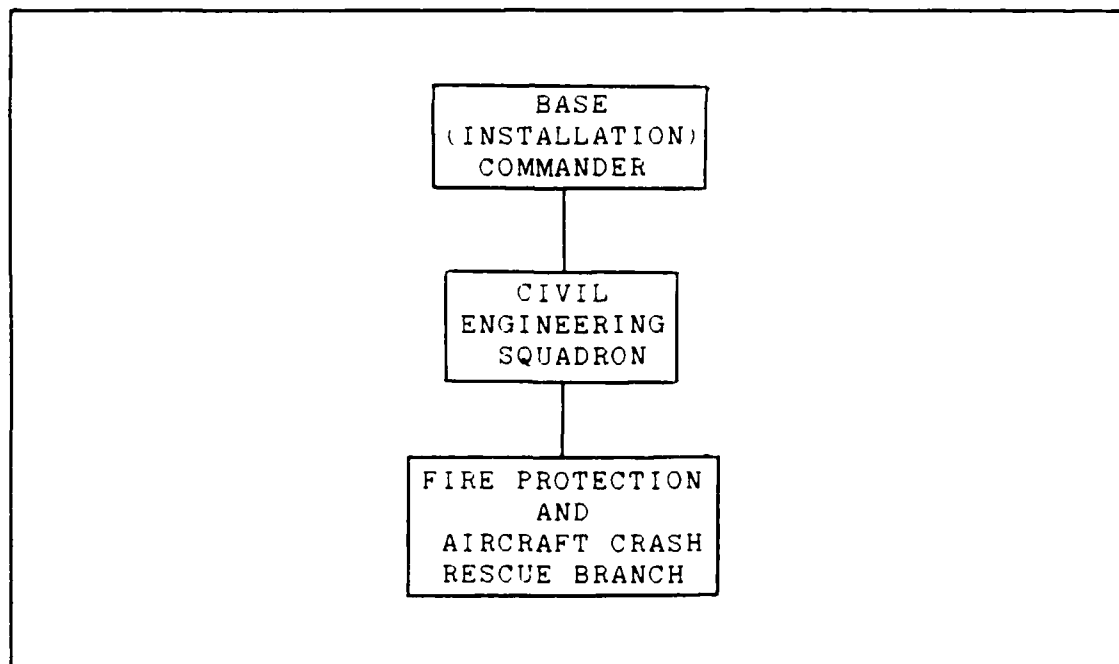


Figure 7. Fire Protection Organization in 1959.
(Source: Compiled from HQ USAF General Order No. 13,
19 March 1959)

the Air Installations Office (AIO). Most of the personnel who came into the AIO career field were primarily engineers by education or by experience. The name Civil Engineering Squadron more accurately reflected the nature of the work being accomplished and the occupational title of those doing the work of the AIO.

Since the name change to Civil Engineering Squadron in 1959, the command organizational structure of the Section has not changed. The fire protection and aircraft crash rescue section (or fire protection branch) still works for the Base Civil Engineer (formerly the AIO), and the Base Civil Engineer still works for the Base Commander at most bases.

Internal Organization. Internally, there have been two major changes since 1959: (1) the addition of an Assistant Chief for Training in the early 1960's, and (2) a change in the role of the Deputy Fire Chief.

Addition of an Assistant Chief. The addition of an Assistant Chief for Training was partially the result of other world events taking place in the late 1950's (18). A technology war of sorts seemed to break out in the late 1950's between the United States and the Soviet Union. The Soviet Union successfully launched a manned vehicle into space during this time period, thus prompting the U.S. to begin a furious technological campaign. As a result, the

U.S. Air Force was heavily influenced by the new technology in the form of more advanced aircraft and more sophisticated weapon systems.

In the wave of all this new technology, Air Force fire fighters realized the need for more advanced training. As new aircraft and weapon systems were developed, new fire fighting vehicles and agents were also being developed to better protect Air Force resources. Therefore in the early 1960's (probably about 1963), the Section created an Assistant Chief for Training to insure that all fire fighters received the best possible training on new vehicles and agents being developed (see Figure 8) (18). As the magnitude of the Air Force mission grew and fire fighting became more technologically demanding, the need for advanced training became overwhelming. The Assistant Chief for Training became responsible for the successful upgrade training required to insure that fire fighters could satisfactorily use the new equipment (18).

Reanalysis of the Role of Deputy Chief. Another change is currently taking place. The "Deputy Fire Chief" is being renamed the "Assistant Chief for Operations and Readiness" and being given co-equal status with the other assistant chiefs (see Figure 9) (18). The position will be filled by the ranking military member of the Section, who will act as Deputy Chief in the absence of the Fire Chief (20). This change seems to be the result of internal

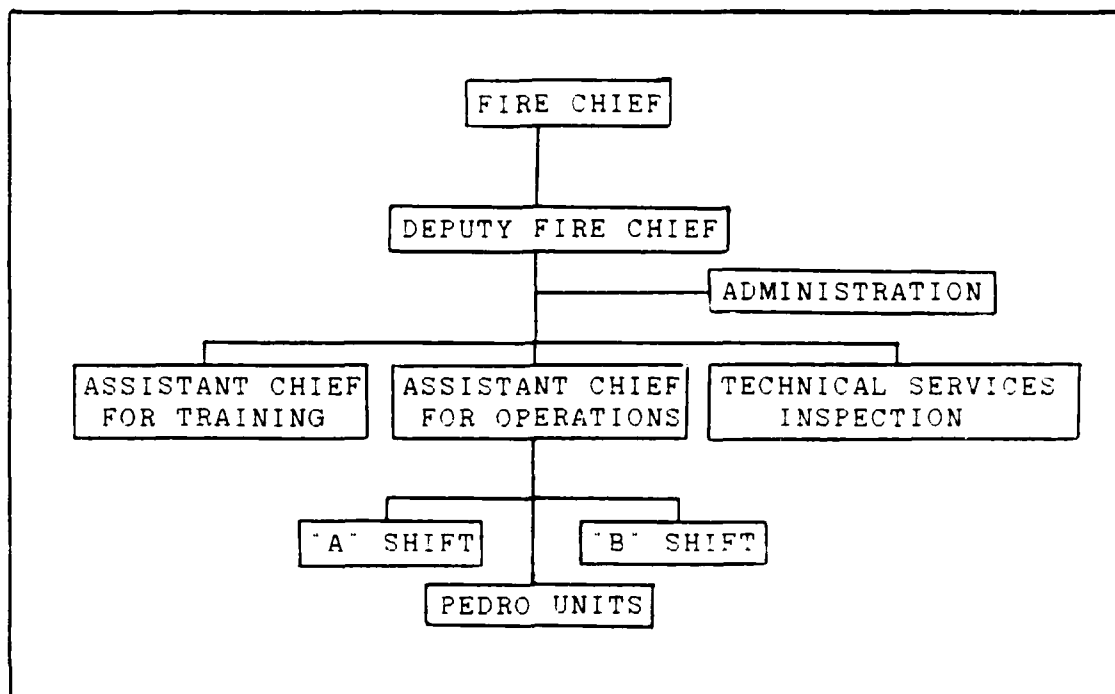


Figure 8. Internal Organization of Fire Protection in the early 1960's.
(Source: Compiled from HQ AFESC Staff Interview, March 1987)

politics more than anything else (19). The responsibilities of the Deputy Chief will not change. The responsibilities of the Deputy Chief will not change. It is simply a reanalysis of the role of the Deputy Fire Chief within the Section.

Major Command Structure. An inconsistency does still seem to exist in the overall organizational structure of the Section, however. The inconsistency appears at the Major Command (MAJCOM) organizational level. At base level, the Section has consistently worked as a separate branch under the Base Civil Engineer. Several years ago, the Fire

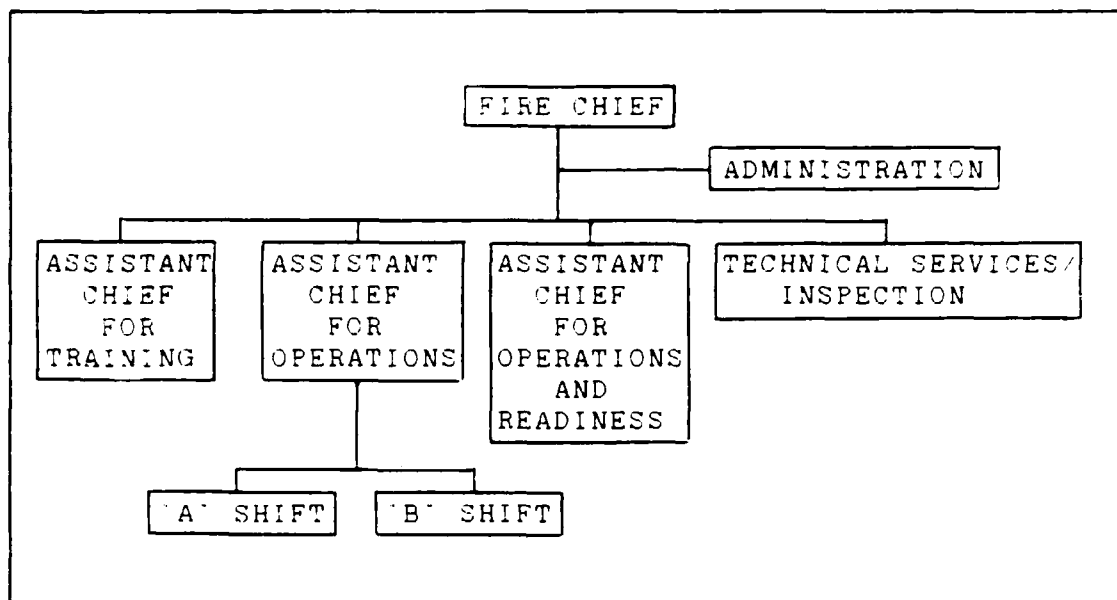


Figure 9. Proposed Internal Organization of Fire Protection.
 (Source: Compiled from HQ AFESC Staff Interview, March 1987)

Protection Group at the Air Force Engineering and Services Center (Air Staff level) also achieved independence as a separate branch under the Air Force Director of Civil Engineering and Services (18). However, at MAJCOM level, the Section is part of the operations and maintenance branch (see Figure 10) (18). The organizational symbol for the Section at base level and at Air Staff level is DEF. At MAJCOM level, it is DEMF. The change seems to reflect a philosophy that fire protection is first and foremost a maintenance function, and therefore should be a part of operations and maintenance (18).

PEDRO Units. Since 1959 there has been one other significant organizational change in the Section - the activation and deactivation of the PEDRO unit.

As the U.S. became more involved in the war between North and South Vietnam in the late 1950's, the Air Force recognized a need for a fire protection capacity which could respond to remote sites more quickly than conventional fire fighting forces (19). Thus, the Air Force created the PEDRO

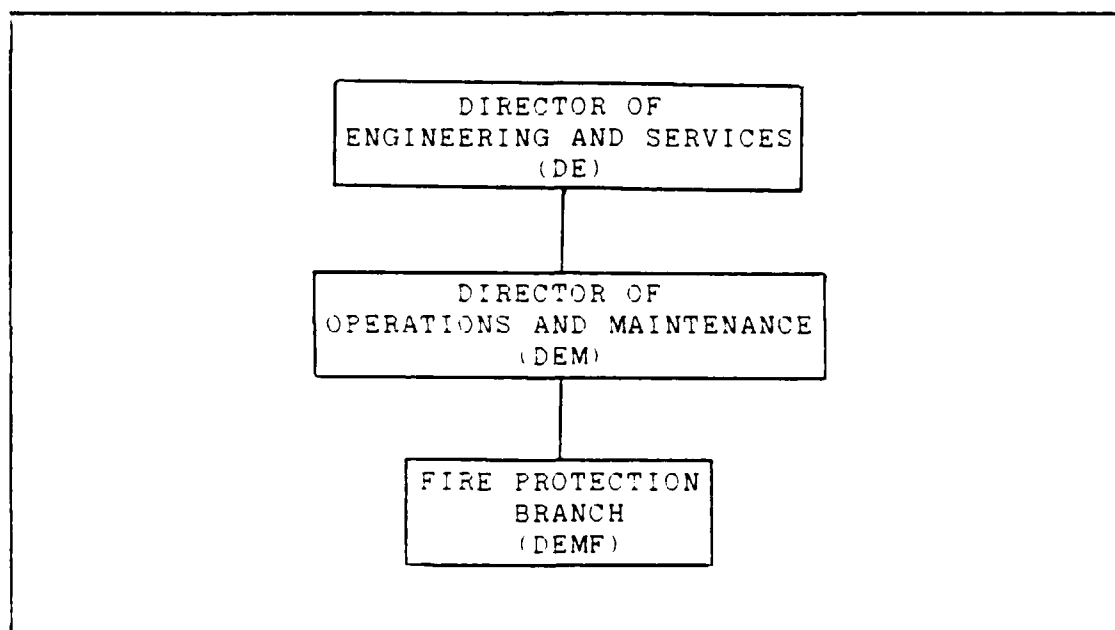


Figure 10. Fire Protection Organization
at MAJCOM Level.

(Source: Compiled from HQ AFESC Staff Interview,
March 1987)

unit. The name PEDRO came from the HH43 "PEDRO" helicopter used by fire fighters in PEDRO units (5:19). PEDRO units were comprised of regular crash fire fighters who specialized in aircraft crew rescue operations (20). The

PEDRO unit usually arrived at a crash scene first. Their primary responsibility was to clear a path through the fire to the cockpit and rescue the crew while the conventional fire fighters concentrated on putting out the fire and trying to salvage the aircraft (20). PEDRO fire fighters carried an "A571XX" AFSC, slightly different from the AFSC of the conventional fire fighter (19). The "A" was added to signify "airborne" fire fighters (20).

The internal organizational structure of the Section did not change as a result of the activation of PEDRO units throughout the Air Force. It seems that the PEDRO units were simply treated as another operational unit of the Section (see Figure 8).

Shortly after the U.S. began withdrawing troops from South Vietnam, the Air Force began deactivating the PEDRO units (19). Although the units seemed to have been very successful in helping save crews and aircraft, the costs of keeping the units seemed to outweigh the benefits. The PEDRO units had required much more financial support because of the equipment used in their operations. At the end of the U.S. role in Vietnam, the financial burden as well as the change back to peacetime operations seemed to mandate the deactivation of the PEDRO units (20). While initial deactivation began as early as 1973, final deactivation was not completed until about 1975 (20). Today, only Edwards Air Force Base maintains a flying fire protection unit (not

a PEDRO unit) to support the Air Force test flight program (20).

Summary. There have not been very many changes in the organizational structure of the fire protection section since 1959. When the name of the Air Installations Office was officially changed to the Civil Engineering Squadron in March 1959, the external organizational structure became what it is today. Internally, the addition of the Assistant Chief for Training in the early 1960's and the current reassessment of the role of the Deputy Fire Chief have been the only major organizational changes made during this era. However, a new AFSC, A571XX, was created in the early 1960's with the activation of the first PEDRO fire fighting units. These units played a very important role in the fire protection service rendered during the U.S. involvement in Vietnam. While the PEDRO units were very successful in Vietnam, it seems that finances and conversion back to peacetime operations were the major factors which terminated the PEDRO program in the mid-1970's.

An organizational inconsistency does still seem to exist at MAJCOM level, however. Base level and Air Staff level fire protection sections work independently of the operations and maintenance branch of Civil Engineering, but the fire protection section is part of the operations and maintenance branch at MAJCOM level.

III. Conclusions and Recommendations

For any organization to be successful, everyone in that organization must know the organization's purpose for being and its principles of operation. They must know the doctrine of the organization. Since the end of World War II, Air Force Engineering and Services has had no formal doctrine of its own. HQ USAF Engineering and Services personnel, under the direction of Major Alfred Hicks (HQ USAF/LEEXO), are currently working on a formal doctrine for Engineering and Services. This doctrine is being developed by tracing the history of Air Force Engineering and Services.

Since the amount of research necessary to compile a thorough history of Air Force Engineering and Services was too much for one office to accomplish, several agencies (including graduate students at AFIT) were called upon to assist in the research effort. This researcher was given the opportunity to retrace the organizational history of Air Force fire protection.

This research document has addressed the organizational history of Air Force fire protection from the end of World War II to the present. The general method of research was survey. Data was gathered from several sources, including literature, historical records, and personal interviews. After all sources were checked, the information was

chronologically organized and analyzed for significant organizational changes in fire protection. Explanations for these organizational changes were also drawn from the information available. If no explanation for a particular organizational change was offered in the data, this researcher offered possible reasons for the change based on the research performed.

The amount of information available limited this research effort. Most of the organizational history presented was based on unit histories provided by the Oklahoma City ALC history office and the Ogden ALC history office and several interviews conducted among the HQ AFESC Fire Protection Group staff.

This research shows that there have been few dramatic changes in the external organization of Air Force fire protection since the end of World War II. The fire protection branch has always been in the operational chain of command under the Base (or Installation) Commander. Even before the Air Force became a separate armed force in 1947, the fire protection branch worked for the officer in charge of real property (the Provost Marshal and later the AIO), who in turn worked for the Base Commander. After the creation of the Air Force in 1947, the fire protection branch continued to work for the AIO, who assumed the Fire Marshal position as an additional duty. The external organization of the fire protection branch assumed its

present structure in 1959 when the name of the Air Installations Office was changed to the Civil Engineering Squadron. This change was probably made to more accurately reflect the work actually accomplished by the personnel in the Air Installations Office and the name associated with their professional trade. Today, the fire protection branch works for the Base Civil Engineer (formerly the AIO), who works for the Base Commander. The Base Civil Engineer also serves as the Fire Marshal. The other significant organizational changes in fire protection have been internal.

The only significant changes in the internal organizational structure of fire protection since the end of World War II have been the addition of an Assistant Chief for Training and the current reanalysis of the role of the Deputy Fire Chief. An Assistant Chief for Training was added in the early 1960's to insure that fire fighters were kept abreast of the many technological breakthroughs occurring during that time. Currently, the role of the Deputy Fire Chief is being re-examined. The Deputy Fire Chief will be renamed the "Assistant Chief for Operations and Readiness" and will be given co-equal status with the other assistant chiefs. The basic internal structure of fire protection has not changed. There are still three basic sections within the branch: the administrative section, the technical services/inspection section, and the

operations section.

There have also been a few peculiarities in the organizational structure of fire protection. One was the activation and deactivation of the PEDRO units. PEDRO units (so named because of the HH43 "PEDRO" helicopter) were flying fire fighting units created during the U.S. involvement in Vietnam. They were primarily responsible for air crew rescue at a crash scene. Their flying status allowed them to respond very quickly to crash scenes in almost any location. These units were deactivated in the mid 1970's when the U.S. pulled its forces out of Vietnam. Another peculiarity concerned the external organizational structure at the Major Command level. At the MAJCOM level, the fire protection branch has always been under the jurisdiction of the operations and maintenance branch, and has the office symbol DEMF. The fire protection branch at the base level and at Air Staff level is completely separate from the operations and maintenance branch, and has the office symbol DEF.

The organizational structure of fire protection has not weathered very many dramatic changes through the years. However, this researcher has recognized that this lack of change reflects a certain stability among the fire fighters of the Air Force. They seem to know exactly what their job is and for whom they work because it has not changed much over time. Follow-on research is necessary, however, to

help us more fully understand the role of the fire fighter in relation to the doctrinal principles of Air Force Civil Engineering.

Several topics are recommended for further research. A study of the evolution of Air Force fire fighting equipment could help us find trends in equipment development which could lead to future breakthroughs. A study of the effectiveness of past and current equipment could help us understand how to use our equipment most effectively in relation to our doctrinal principles. Similar studies on the evolution of fire fighting vehicles and their effectiveness through the years could produce similar results. History tends to not only teach us more about where we have been, but also gives us insight on where we are going. Future development of doctrine in Air Force Civil Engineering depends on the study of our past. We must capitalize on the opportunity to learn.

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The objective of this research was to present the organizational history of Air Force fire protection from the end of World War II to the present time. The research focused on identifying the significant changes which have taken place during that time period and, if possible, explaining why those changes were made.

The study found that the external and internal organizational structures of Air Force fire protection have not dramatically changed since the end of World War II. The fire protection branch has always worked for the officer in charge of real property, and, ultimately, the Base Commander. There were several external reorganizations involving the fire protection branch in the years immediately preceding the creation of the Air Force. However, most of the significant external organizational changes since that time have resulted from name changes. The only two significant internal organizational changes which have taken place during this time have been the addition of an Assistant Chief for Training and a reanalysis of the role of the Deputy Fire Chief.

Further research is recommended for the study of the evolution and effectiveness of Air Force fire fighting equipment and vehicles.

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