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THE BEGINNINGS

OF THE

AIR TRAFFIC CONTROL

CAREER FIELD

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Preface

The air traffic control system of the United States Air Force is an important part a common, national system that serves our nation's aviation community. Just as this community consists of both civil and military aircraft, our nation's air traffic control system consists of both civil and military air traffic controllers. An aircraft traveling through our nation's airspace will likely be controlled by both civil and military air traffic controllers during in its journey. These controllers employ a common set of procedures in order to ensure the aircraft's journey is safe and expeditious. Air Force controllers use the same procedures as Army or Navy controllers, or as the civil air traffic controllers of the Federal Aviation Administration[1]. This common system is the result of history.

The history of air traffic control in the United States is a history of rules and procedures. These rules and procedures were developed according to the laws of supply and demand to meet the needs of a developing aviation industry. (6: 1) The following pages provide a glimpse into the development of the air traffic control career field.

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[1] FAA Handbook 7110.65, *Air Traffic Control*, regulates all air traffic control procedures in the United States.

The Beginnings of the Air Traffic Control Career Field

"SABER ZERO ONE, NUMBER TWO, FOLLOW T THIRTY-EIGHT BASE."

"UNITED FOUR SEVEN FIVE, RADAR CONTACT, FLY HEADING

ONE THREE ZERO, VECTORS FOR I-L-S FINAL."

"LUCKY FOUR FIVE, TRAFFIC C ONE THIRTY EIGHT MILE FINAL,

WIND TWO THREE ZERO AT EIGHT, CLEAR FOR TAKEOFF."

Most of us will recognize the above phrases as air traffic control instructions. These and similar phrases are issued by United States Air Force air traffic controllers thousands of times each day from Air Force air traffic control facilities all over the world. These air traffic controllers are responsible for ensuring that aircraft operations in the vicinity of their assigned stations are conducted safely and efficiently. Overseas, US Air Force air traffic control facilities interface with host nation facilities, and often become a vital part of the host nation's air traffic control system. In the United States, Air Force air traffic control facilities are an integral part of a system that serves all aircraft (civil and military) operating in US airspace. This system evolved, as it continues to evolve, around the need to provide a safe operational environment for an ever growing aviation community. The following paragraphs provide a brief look at the beginnings of the air traffic control system in the United States. We will look at the development of independent systems at local airports, the development of the first inter-airport system, early Army air traffic control, and the beginnings of the common civil/military system in place today.

Most early attempts to control air traffic stemmed the need for a number of aircraft to use the runways of local airports at roughly the same time. This was usually the result of flight school operations being conducted at an airport. In 1918, the Army operated a flight school at Ellington Field near Houston, Texas. It soon became apparent that a method was needed to signal student pilots as to when they could use the runway. Those running the flight school at Ellington developed a light system for passing very basic control instructions to the students. Light signals were used to clear the students for takeoff, clear them to land, and instruct them to yield to aircraft having difficulty. (6: 2) A similar system was developed at Chicago in 1928. In Chicago, however, flags were used instead of lights. An "aerial traffic cop" was positioned in the center of the airfield and issued instructions to pilots using a system of flag signals. (7: 7) Although these control procedures were effective, as the number of aircraft operating between airports increased, so did the need for standardized procedures.

The first attempt to develop a standardized, inter-airport air traffic control system occurred in the early 1930's. This effort took place at some of the busier airports in the northeastern US. By this time, the airline industry had grown substantially. Some major airports were handling as many as one hundred seventy-five operations a day. (7: 7) This increase in operations lead to discussions among the major airlines about the need for better control of airport operations. In 1935, the New England Air Terminals Corporation established the first standardized system of air traffic control. (5: 19) Common procedures were established between major airports by inter-airline agreements. The controllers of the New England Air Terminals Corporation found that they could handle an enormous number of aircraft. However, because the new procedures applied only to the airlines that had agreed to them, another problem presented itself. General aviation pilots were not bound to obey the new procedures, frequently ignored the landing sequence established by the controllers. It soon became obvious that private efforts would not

be enough to provide adequate services. The government would eventually have to assume this responsibility. (5: 20)

Just as an increase in civil aviation had spawned the first air traffic control systems at civil airports, the development of air traffic control procedures by the Army was the result of increased Air Corps operations at Army airfields. In the mid-1930's the Army began to acquire significant numbers of aircraft. Each local flying unit developed its own peculiar procedures for controlling aircraft operations. These procedures were based on the unique requirements of the airfield. (6: 3) Early Army air traffic control facilities were managed by noncommissioned officers, and staffed by enlisted personnel[2]. These early tower operators, were normally radio operators who, through on-the-job training, had become proficient at applying locally established air traffic control procedures. (6: 5) Although these local procedures were effective, procedures varied from airfield to airfield. Recognizing the need for standardization, in 1937, a sub-committee of the Air Corps Technical Committee noted that the Army's ability to provide adequate air traffic control services had not kept pace with the advances made in aircraft performance. The sub-committee concluded that "Equipment and facilities now available to the Army Air Corps for air command and air traffic control are inadequate to ... provide individual pilots and formation leaders the minimum essential air traffic control service". (8: 2 - 3) In order to correct this deficiency, the Army established the Army Airways Communications Service (AACS) in 1938. (6: 5) AACS established standard duties for the Army's control tower operators. These duties included issuing takeoff and landing instructions, assigning landing sequences, providing airfield condition information to arriving and departing aircraft, and assisting emergency aircraft. Normally, the tower controller was responsible for aircraft operating within three miles of the airfield. This was sometimes extended to as far as forty miles. (6: 3) The Air Corps'

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[2] This practice continues today. USAF air traffic control facilities are managed by MSgts, SMSgts, or CMSgts depending on the type and complexity of the facility.

1939 *Handbook of Instruction: Air Corps Radio Data and Aids To Airways Flying* required pilots to maintain continuous contact with air traffic controllers when in controlled airspace, and made instructions issued by air traffic controllers binding upon pilots. (2: 12) This system served the Army well. However, events over the next few years showed the need for common, standardized procedures for both military and civil air traffic operations.

Although the Air Commerce Act of 1926 stated that the Secretary of Commerce should "establish air traffic rules for navigation and rules for the prevention of collisions between vessels and aircraft" (7: 6), it wasn't until 1936 that the Department of Commerce actually assumed responsibility for air traffic control. (4: --) Even after assuming this responsibility, and even though there were problems with the operations of local airports, the department initially concerned itself only with controlling aircraft that were traveling along designated routes between cities. The early Department of Commerce air traffic controllers used maps, chalkboards, and mental calculations to ensure the safety of aircraft operating along these routes. (4: --) As the amount of air traffic continued to rise, it became apparent that more Federal involvement would be required. The 1938 Civil Aeronautics Act created an independent federal agency to regulate the growing aviation industry. The Civil Aeronautics Authority was chartered to issue air carrier certifications and regulate air fares. (4: --) In 1940, the Civil Aeronautics Authority was split into two independent agencies: the Civil Aeronautics Board (CAB), and the Civil Aeronautics Administration (CAA). The CAB was responsible for establishing safety rules, investigating accidents, and regulating air fares. The CAA was charged with certifying pilots and aircraft, enforcing safety standards, developing airways, and providing air traffic control service. (4:--)

Although the establishment of the Civil Aeronautics Administration had done much to standardize enroute air traffic control service for civil aviation, military aircraft continued to operate somewhat

independently. The years of 1940 and 1941 saw a "phenomenal increase in airway congestion" from both military and civil aircraft. The Army had begun using aircraft for the transport of military supplies. Training by the Army, Navy, and civil aviation communities continued to increase. (3: 3) These factors lead to increasingly difficult problems in the air traffic control system. In an effort to resolve these problems, representatives of the Army, Navy, CAA, and CAB were gathered together to study the matter. The result of the study was the creation of the Interdepartmental Air Traffic Control Board (IATCB). The IATCB represented "a voluntary effort by the four agencies to coordinate their activities in relation to air safety, primarily in connection with air traffic control problems which have arisen as a result of our national defense efforts." (3: 4) Although the IATCB had no specific powers, it made recommendations to the CAB. After the IATCB conducted its initial study, the CAB adopted far reaching changes to the current Civil Air Regulations. These changes were designed to "facilitate the movement of military aircraft as well as to provide greater safety on the airways in the face of the enormous increase in traffic." (3: 4) In addition to these changes, the need was recognized for still greater control over air traffic operations. In 1942, the CAA began to extend its authority to takeoff and landing operations. (4: --) Military and civil air traffic would now be controlled under a common set of rules throughout all phases of flight.

In the years following these early developments in the air traffic control system, many improvements continued to be made. In 1942, the Army established it first service-wide Air Traffic Control Operator Course at Chanute Field, standardizing initial training for its air traffic controllers. In 1945, the IATCB was given specific responsibilities, and renamed the Air Coordinating Committee. (1: 1) In 1952, the first air traffic control radar facility became operational in Washington, DC. In keeping with the long standing policy of cooperation, this facility served both military and civil air traffic. (1: 12) At the heart of these, and the many other improvements, in the system has been the Air Force air traffic controller.

Air Force air traffic controllers have provided, and continue to provide, an essential service to aircraft all over the world. As part of the common national air traffic control system, these enlisted men and women contribute to the safety of the entire aviation community of our nation. As part of the Air Force, they ensure that aircraft operations in Air Force controlled airspace are conducted safely and expeditiously. They have participated in virtually every major Air Force undertaking since its inception. The Air Force air traffic controller is a vital part of Air Force air operations, and will likely be so for some time to come.

BIBLIOGRAPHY

1. Air Coordinating Committee, *Annual Report to the President by the Air Coordinating Committee, 1952*, Washington: US Government Printing Office, 1953.

2. Air Corps Materiel Division, Flight Service Section, *Technical Order No. 08-15-2, Handbook of Instructions, Air Corps Radio Data and Aids to Airways Flying*, Wright Field, OH, 1939.

3. Civil Aeronautics Board, *Annual Report of the Civil Aeronautics Board*, Washington: US Government Printing Office, 1941.

4. Federal Aviation Administration, *A Brief History of the Federal Aviation Administration and Its Predecessor Agencies*, Federal Aviation Administration, 1995.

5. Leish, Kenneth, *Interview with LeRoy Ponton DeArce*, September 1960.

6. Madden, Richard J., *History of Military Air Traffic Control Training 1938- 1950*, Maxwell AFB, AL: Air University, 1982.

7. Morris, Thomas H., Jr., Major, *Air Traffic Control Development: An Analysis*, Maxwell AFB, AL: Air University, 1962.

8. Olds, Robert, Lt. Col., *Report of Sub-Committee of Air Corps Technical Committee on Item 9 (Communications)*, Air Corps, 1937.