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The Economic Impact of Hill Air Force Base on the Ogden Area

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THE ECONOMIC IMPACT OF HILL AIR FORCE BASE ON THE OGDEN AREA

by

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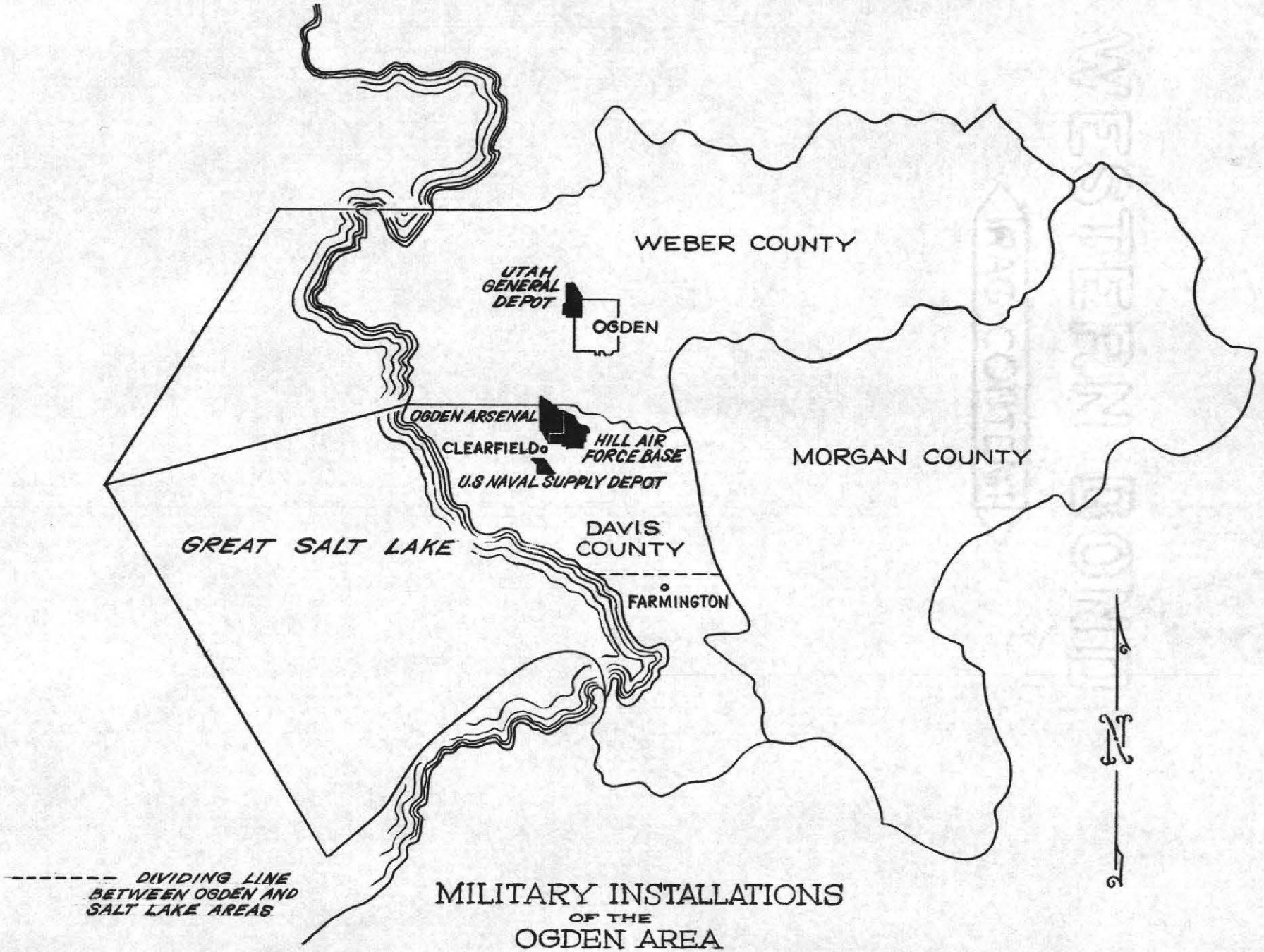

MILITARY INSTALLATIONS
OF THE
OGDEN AREA

PREFACE

Many large federal defense installations have been maintained for almost a decade since World War II. In contrast, only a few installations were continued in previous postwar periods. Too, they were operated on a small peacetime scale and on a relatively permanent basis. Adjacent communities could, therefore, accept the economic benefits with little danger.

The extraordinary expansion of defense installations over a long period since the last war has developed a community acceptance that has important implications. In certain localities, of which the Ogden Area is one, the defense installations so outweigh other local industry, as to create a garrison economy. Substantial new financial commitments, such as housing developments and business expansions have been made on the basis of money expenditures of these defense installations. Should they be discontinued or their level of operation materially reduced, these areas would suffer serious financial distress.

While much has been said and written about the responsibility of the federal government to bolster the general economy, little attention has been given to the effect of large defense installations on relatively small communities. The purpose of this thesis is to present the economic impact of a representative installation: Hill Air Force Base (an air depot), on a relatively undeveloped industrial locale: the Ogden Area.

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I am indebted to Professor Leo M. Loll, Jr., who has been most helpful and understanding in suggesting improvements in this study. Mrs. Ardus Hazen, a fellow worker at Hill Air Force Base, provided invaluable assistance in organizing and typing the manuscript.

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John D. McConahay

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CHAPTER I

HISTORY OF DEFENSE INSTALLATIONS IN THE OGDEN AREA

The people of Utah saw the first federal military installation established in the area almost a century ago. They were not pleased in 1857 when they heard that President Buchanan was sending some 2500 soldiers to set up camp in the Salt Lake Valley. As the troops approached the Territory, every available means was used to resist their advance. Trenches and other defenses were prepared and all forage burned on the routes to the Valley to hamper or prevent their approach (17, p.303). When the troops arrived in 1858 they were permitted to enter the Territory of Utah without further resistance. But an express condition of the peaceful reception was that their camp be established at least 40 miles from Salt Lake City (17, p.308).

The attitude of the community 100 years later toward the establishment of federal military installations in Utah was radically different. Citizens in the Ogden Area[1] were more receptive to locating the huge depots there. For at least three of the local depots they raised substantial sums of money with which they purchased acreage important to the development of the depots. This land was then transferred to the federal government without payment.

The reasons and conditions governing the location of these later installations are, of course, entirely different from those that brought

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1. The Utah State Employment Service has defined the "Ogden Area" for employment purposes to be Weber and Morgan counties and that portion of Davis county north of the north line of Farmington, Utah. This definition has been adopted for most economic studies and reports of the region. It is so used in this thesis.

the first federal military post to Utah. Since 1858, many military installations have been established in Utah. Some were constructed during periods of peace, but most of them were the result of war efforts. Included are such installations as: Camp Hooper, Fort Douglas, Camp W. G. Williams, Camp Kearns, the Third Military Headquarters, the Ninth Corps Area Headquarters, the Publication Depot, the Salt Lake Air Base, the Utah Ordnance Plant, the Northwestern Remount Station, the Division and District Army Corps of Engineers Headquarters, the Wendover Bombing School, the Navy Radio Training School, Bushnell General Hospital, Tooele Ordnance Depot, the Parachute Plant, Remington Arms Plant, the Incendiary Bomb Storage Dumps, Ogden Arsenal, the Army's Utah General Depot, United States Naval Supply Depot Clearfield, and Hill Air Force Base. Some no longer exist, or the facilities have been applied to other uses. Many still used for military purposes are operated at only a fraction of their wartime strengths.

Four of the existing installations are: the Ogden Arsenal, Utah General Depot, U. S. Naval Supply Depot Clearfield, and Hill Air Force Base. All four have been important to the economy of Utah ever since their inception. Because of their size and concentration in the Ogden Area they have been of major importance to that community. The first two are Army installations. The third is under the Department of the Navy, and the fourth, Hill Air Force Base, is responsible to the Department of the Air Force.

This study is primarily concerned with the latter, Hill Air Force Base, or as it is commonly called, Hill Field. It has been chosen as the subject of this thesis for several reasons: (1) The author has been closely associated with its operations for several years as Comptroller. (2) In number of people employed in 1954 and in impact

on the local economy it is approximately double the combined total of the other three depots. (3) Hill Air Force Base is by far the largest employer in the Ogden Area as well as the State of Utah.

It has two other characteristics that set it apart from other local defense installations: (1) It has a relatively large maintenance function, which is its predominant mission and which employs more people than the total for all other functions of the depot. In fact, the number of people employed in the Hill Field Maintenance Directorate is greater than the total employment in all the other depots in the Ogden Area. (2) Its responsibility for technical-logistical guidance and support of Air Force units in the eight western states: Washington, Idaho, Montana, Wyoming, Utah, Colorado, North Dakota, and South Dakota, and in Alaska.

Hill Air Force Base is the home of the Headquarters, Ogden Air Materiel Area, which directs all depot and area activities as well as having command responsibility for the base itself. There are also a number of Air Force units located on the base but not under the command of the Ogden Air Materiel Area. A few of the largest of these units are: the 461st Bombardment Wing (Light), 5670th Chemical and Ordnance Test Group, and the 4677th Radar Evaluation Flight.

HILL AIR FORCE BASE

Hill Air Force Base, had its genesis in the establishment of a temporary Air Corps Depot in Salt Lake City in 1934. The experience of this organization indicated the value and need for a more permanent air depot in the area. This need was reflected in the recommendation of the Materiel Division of the Headquarters, Air Service Command, then located at Wright Field, Dayton, Ohio. On July 6, 1934 that office recommended that such a depot be established at the present site of Hill Field (5, p.1).

The early need for depot-support capability in the intermountain area developed from the sudden and very trying logistical problems that arose when the Air Force (then the Army Air Corps) was directed to fly the civilian air mail. The government contracts with civilian air carriers were terminated and the Air Corps was forced to provide its own military aircraft and support facilities for the new mission. It was neither prepared nor equipped for such a function. Consequently, the maintenance of military aircraft on regular repetitive schedules, and in sections of the country where no previous sustained military air operations had been carried on, immediately created numerous logistical problems. The experience of this depot in meeting the problems of this civilian air-transportation exercise was directly applicable to military long-range air defense objectives of the times.

The depot's location in an area where the long-range defense objectives could be tested was ideal. This was immediately recognized by General (then Colonel) H. H. "Hap" Arnold, one of the leading exponents of air power at the time and later commander of the United States Air Forces during World War II. He also knew that long-range bombardment aviation had progressed to a degree that made coastal depots highly vulnerable. General Arnold's enthusiastic support for an intermountain air depot was an important factor in its being finally located in the Ogden Area (5, p.1).

The passage of the Wilcox-Wilson Bill (Exhibit A App.) by Congress on August 12, 1935, provided the legal authorization for such a depot on a permanent basis. This did not assure that the depot would be located in the Ogden Area or even in the State of Utah. The bill merely provided that the Secretary of War was authorized and directed to determine,

...the location of such additional permanent Air Force stations

> and depots as he deems essential, in connection with the existing Air Force stations and depots and the enlargement of the same when necessary, for the effective peace-time training of the Air Force components of our overseas garrisons ... (27, par. 1343a).

It should be noted that at the time this act was passed (1935) and up until 1940 there were only four major Air Corps supply and maintenance depots in the continental United States: (1) the Sacramento Air Depot on the west coast at Sacramento, California; (2) the San Antonio Air Depot in the southwestern United States at Duncan Field, San Antonio, Texas; (3) the Fairfield Air Depot in the midwest at Patterson Field near Dayton, Ohio; (4) the Middletown Air Depot in eastern United States at Olmsted Field near Middletown, Pennsylvania.

The Secretary was given certain guidelines by the Wilcox-Wilson Bill as to the basis upon which stations would be located in designated geographical areas of the United States. Congress prescribed seven regions which he should consider in locating the new installations. The sixth pertained specifically to a depot authorized in the western mountain area for which the criteria was established as follows:

> In determining the locations of new stations and depots, consideration shall be given to the following regions for the respective purposes indicated: ...(6) The Rocky Mountain area - to provide a depot essential to the maintenance of the General Headquarters Air Force, and to afford, in addition, opportunity for training in operations from fields in high altitudes (27, par. 1343a).

It was only with reference to the Rocky Mountain installation that both a depot and a training mission was designated. Almost twenty years later, it is not apparent why the altitude training requirement was stated or just what was intended. Nor does it appear in the history of Hill Field that any training mission was ever assigned specifically because of the altitude.

General Arnold's interest in the location of an air depot in the

Ogden Area did not cease with the Wilcox-Wilson Bill. He was the Air Corps representative of the party of Army officials and members of Congress that subsequently visited the Rocky Mountain area to inspect possible sites for the depot authorized by the bill. Under the guidance of the Military Affairs Committee of the Ogden Chamber of Commerce this group was shown the area south of the Ogden Arsenal, the present location of Hill Air Force Base. The advantages of the location were immediately apparent to the inspecting parties. The Ogden Air Service Command History states that,

> Mr. Ezra J. Fjeldsted, Secretary of the (Ogden) Chamber of Commerce was present at the time and he states that General Arnold and the party were impressed with this location, not only from a strategic standpoint but also because it was the nearest to a natural airdrome in the entire Salt Lake Valley area, 2 miles square and 90% usable; about 12 miles from the center of the city of Ogden; having a railroad spur on the site leading from the main line of the Union Pacific Railroad. The flight approach to the site was excellent from all directions and it had excellent drainage possibilities which would assure a firm foundation for airplane operation in all kinds of weather. The water supply was also adequate and satisfactory (5, p.2).

The courtesies extended to General Arnold's party by the Ogden Chamber of Commerce was part of an aggressive local community program initiated after the passage of the Wilcox-Wilson Bill. This action to obtain an air depot for the Ogden Area was part of a larger program to expand the industrial base of the area. There had been very little industrial expansion in the area prior to this period. The community was aware of the economic advantages that had accrued over the years from the operations of the Ogden Arsenal even though it had never been a very large installation. All of these factors naturally encouraged community action to obtain other defense projects. The histories of the Utah General Depot and the U. S. Naval Depot Clearfield show that the Ogden organization was also working, during the same period, to have them located in the Ogden

Area. It had been successful in obtaining the Ogden Arsenal and was anxious to obtain others of a similar nature.

The Ogden Chamber's interest in the air depot culminated in 1936 in the Chamber purchasing options on all the land on the site recommended several years before and inspected by General Arnold's committee. Because of delays by the federal government in implementing the Wilcox-Wilson Bill it was necessary for the Chamber to renew the options from time to time at its own expense. This organization played a most important part in bringing Hill Field to the Ogden Area. Through its initiative in obtaining the options it was able to guarantee to the federal government that the land would be available at a fair price. The Chamber also donated 383 acres of the site (over 10 per cent of the area) at no cost to the federal government (5, Sec I, p.3).

But the land alone did not insure the construction of a depot. While the Wilcox-Wilson Bill provided the authority for an air depot in the Rocky Mountain region, it neither appropriated funds for its construction, nor insured that it would be located in the Ogden Area. It was not until three years later, June 1939, that Congress (bill signed by President Roosevelt, July 1, 1939) definitely established the depot at its present location. At the same time the bill authorized an initial appropriation of $8,000,000 for its construction. Funds for surveys, site determination and other expenses exclusive of actual construction were provided in the original Wilcox-Wilson Bill (27, par. 1343d).

About this same time the installation received its official name: Hill Field (later Hill Air Force Base), in honor of a young Air Corps Major, Ployer P. Hill (28, p.1), who lost his life in the service of his country during flight test of the first B-17 bomber delivered to the

Air Corps (1935).[1] By coincidence this was the same year that the air base first became a possibility through passage of the Wilcox-Wilson Bill.

With the official establishment of Hill Air Force Base the Ogden Chamber of Commerce again rendered valuable assistance. As work was begun at the site the Chamber borrowed grading equipment and other necessary materials from a number of the state political subdivisions. The availability of this equipment permitted the construction of the runways and other facilities to start earlier and progress more rapidly than winter conditions would otherwise have permitted. Appropriately enough, in December 1940, Mr. Frank M. Browning, Chairman of the Military Affairs Committee of the Chamber of Commerce symbolized the beginning of construction of the new air base by lifting the first shovel full of dirt at the site of one of the new buildings (5, p.4).

Previously used for dry farming, the land on which the new base was constructed covered an area of 3,501.82 acres and was valued at the time at $128,079.60 (5, Sec.II, p.1). The first air field facility constructed was the runway complex started in July 1940 and completed in a little more than a year at a cost of $1,358,093. The first permanent buildings on the base were the Quartermaster Commissary and Warehouse and the Quartermaster Garage and Shop which were started January 12, 1940, and finished September 20, 1940.

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1. Major Hill was born at Newburyport, Massachusetts October 24, 1894. He obtained his early education in the same community. Later he attended Brown University, Providence, Rhode Island where he studied engineering, graduating in 1916. In December 1917 he enlisted in the Aviation Section of the Army Signal Corps, which was the forerunner of the United States Air Force. From that time on his life was dedicated to serving his country in military flying. In July 1918 he received a commission in the Regular Army. After serving in many capacities as an officer, and in many parts of the world, he made the great sacrifice for his country while testing one of the country's first four-engine bombers.

Shortly after the completion of these first buildings (November 7, 1940) Lieutenant Colonel (later Brigadier General) Morris Berman assumed command as the first commanding officer of Hill Field (23). He continued to serve in that capacity throughout the period of initial construction and through its early operational life until June 26, 1944.

The first shipment of supplies was received at Hill Field in January 1941. Early shipments of this type had to be stored in temporary buildings as the first permanent warehouse for other than base housekeeping materiel was not completed until July 23, 1941. With this first shipment logistical operations and the construction of new facilities were continued side by side at Hill Field for a number of months.

The new installation was planned as a major Air Corps supply and maintenance depot, and this has been its prime function during the first fifteen years of its existence. The operating organization of the base was entitled the Headquarters, Ogden Area Depot.[1] This organization was assigned command direction of Hill Field and responsibility for the depot mission as well as base housekeeping functions. The latter category covers the maintenance of physical facilities on the base and the servicing and support of military and civilian employees assigned to the base. The mission responsibilities pertained to the logistical support of other military air organizations throughout the Air Corps.

To carry out its mission the new depot had a supply organization that was fully accountable for the receipt, storage and issue of spares

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1. The Ogden Area Depot is the main mission organization at Hill Air Force Base. It has also been entitled, Ogden Air Technical Service Command and Ogden Air Materiel Area (the designation at the end of 1954). At various times Hill AFB itself has been operated either directly by the Area Commander or by a subordinate commanding officer. Numerous other military units not under the Area Commander are, or have been, tenants of the base. Hill AFB is therefore used as an all-inclusive term to cover all organizations located, and functions performed there.

and repair parts and all other necessary Air Corps supplies. It was also provided with an Engineering Department (subsequently re-designated as the Maintenance Directorate) responsible for depot-level installation, modification, service, and repair work on aircraft and related items.

The depot was initially assigned a control area comprising the states of: Utah, Idaho, Nevada, western Montana, and Washington. As such it was to be an independent depot supporting military air units in the northwestern portion of the United States.

It also had an additional mission as an auxiliary reserve depot to serve all the area controlled by the Sacramento Air Depot in the event of a successful attack upon the latter.

UTAH GENERAL DEPOT

On the north west limits of the City of Ogden is the Utah General Depot which was conceived and constructed at about the same time as Hill Field. The land upon which it was built was purchased September 27, 1940 for approximately $510,000. About 20 per cent, or $100,000 of this was contributed by the citizens of Ogden (7, p.2). Some 1678 acres were required for the use of the General Depot. This is slightly less than half of the total of 3500 acres required in the construction of Hill Field.

The first work on the Utah Depot was the preliminary surveying which was begun on December 8, 1940. Construction progressed rapidly after that and the first warehouse was ready for use by June 16, 1941.

The Utah General Depot was formally activated on September 15, 1941 as an installation under the jurisdiction of the Quartermaster General of the Army and under the command of Colonel William L. Mays, Quartermaster Corps. It was designated to receive, store, and issue, supplies and equipment for Army activities in designated areas. Its area of support was to

cover military activities in the western portion of the United States, and overseas in the Far East, and Alaska.

As a general depot it is not limited to processing supplies and equipment of any one Army Technical Service. Thus, items used by the Chemical Corps, Engineer Corps, Signal Corps, Adjutant General, as well as the normal Quartermaster materiel, are the responsibility of this depot.

Examples of Quartermaster articles are clothing and other personal items required by the individual soldier, the various pieces of equipment that he carries, the beds and bedding that he sleeps upon and the food that he eats. This section of the Depot operations is also responsible for storing and shipping baggage and household effects of military personnel. It also performs depot maintenance on Quartermaster supplies when required to make them fully usable.

The Chemcial section of the depot is a supply source for such items as flame throwers, smoke generators and other technical items of the Army Chemcial Corps. It also receives, inspects, classifies, and processes for reissue general chemical supplies that are turned in to the depot by using organizations.

The Engineer Supply Section, one of the largest organizations at the Utah General Depot, receives, stores, and issues all the various types of engineering equipment used by the Army. Tractors, graders, cranes, and rollers are examples of some of the larger items. Depot maintenance is also performed on this equipment, and to a limited extent assembly and manufacture of components is accomplished. This section further provides field technical assistance on the maintenance of this equipment to both Army and Air Force organizations in the western United States.

The Adjutant General Supply Section maintains a reserve of Army publications and blank forms which are issued, as required, to western

Army installations.

The last major section is the Signal Supply. It stocks: radio sets, telephones, wire and cable, and special-purpose vehicles such as line trucks and trailers used in the maintenance of communication systems. It also processes and repairs cable and wire received from using agencies in the Army.

In addition to the aforementioned specialized functions, the Utah General Depot operates a Department of Defense Printing Service which prints publications, blank forms, and other printed matter for Army, Navy, Air Force, and other federal agencies located in the western United States. Hill Field, the subject of this thesis, is one of the best "customers" of this service.

To accomplish its varied missions the Utah General Depot has storage facilities consisting of 40 warehouses with total storage area of 5,384,000 square feet of shed space. There are an additional 73,000 square feet of flammable and 19,000 square feet of magazine storage facilities. It also has available nearly 10,000,000 square feet of open semi-improved storage space. The Depot's modern shop facilities cover some 220,000 square feet (7, p.7).

U. S. NAVAL SUPPLY DEPOT CLEARFIELD

The third armed service is represented in the Ogden Area by the U. S. Naval Supply Depot Clearfield. This installation is located twelve miles to the south of the City of Ogden, and adjacent to Hill Field and the community of Clearfield, Utah. This was the most recent link to be constructed in the Ogden military depot complex.

The Naval Depot originated in correspondence prepared by the Navy Bureau of Supplies and Accounts on January 1, 1942 and addressed to the Secretary of the Navy. The subject of the communication was a request

to the Secretary that action be taken to obtain public funds for the procurement of land on which to locate a suitable inland Naval Supply Depot. The Secretary approved the request on February 7, 1942 and directed the Chief of the Navy Bureau of Yards and Docks to obtain the necessary funds and to designate a Navy officer to act as a member of a board. The purpose of the board was to study the requirement and to recommend at least three potential sites. The board was convened on March 2, 1942 and prepared a recommendation that a naval depot be located in the Ogden-Salt Lake area. Information is not available as to whether two other sites were recommended at the time in accordance with the Secretary's request. The board did recommend that the proposed depot contain 7,000,000 square feet of storage space and that $33,600,000 be provided for the initial land purchase and the construction of the first depot increment. The Secretary approved the Ogden Area location and allocated the necessary funds to begin construction (3, p.1).

The construction of the Naval Depot was started on June 22, 1942 and completed some ten and one half months later. The first supplies were received and stored on December 21, 1942. Some four months later, on April 10, 1943 the depot was officially activated, or as the Navy terms it, "commissioned". Captain Omar D. Conger was in charge at the time as the Depot's first commanding officer. The initial cost of construction was somewhat less than estimated, being $25,489,483.72 (6, p.6-7).

The Naval Depot currently has 110 major buildings and 43 minor ones. Sixty-eight of the buildings are warehouses having approximately 9,000,000 square feet of storage space. The military reservation consists of 863 acres and contained within this are 5,000,000 square feet of open storage space (6, p.11).

The peak activity of this depot was reached in 1945 at which time

it had a work force of 6500 civilians and 1800 military personnel.

The current functions of the depot are many and varied. It is a reserve stock point for general naval stores, dry provisions, lubricants, aeronautical stores, photographic, electronic, ordnance, and submarine materiel and repair parts. It is also a stock point for innumerable diesel items, including complete diesel engines and diesel drive generators. The sole Navy Personal Effects Distribution Center is located here. This center administers the personal effects of Navy personnel who have disappeared or become deceased. The Navy Hydrographic Office for the western portion of the United States is located at the Naval Depot.

Like the Utah General Depot, it also provides certain specified support to defense activities outside its own Department. An example of this is the performance of surplus property functions for Army and Air Force, as well as Navy organizations in Utah. All military surplus property that generates in this area is disposed of under the direction of the Naval Depot. This does not require the physical movement of the property in all cases to the Clearfield Depot. When more economical to do so, it will be retained where originally located until the buyers take possession. The Naval Depot acts, in such cases, as a central agency for effecting the disposal.

Portions of the extensive warehouse space of the Naval Depot are also used by the Utah General Depot and Hill Field for storage of the overflow of supplies from their more limited warehouse facilities. Cross-servicing agreements are negotiated in such instances, which specify the services or facilities to be provided by the Naval Depot and the amounts to be paid by the recipient military department. Some space is also used by other governmental agencies outside the Department of Defense.

OGDEN ARSENAL

The fourth of the Ogden Area defense installations is the Ogden Arsenal. Although the last to be discussed in this chapter it was the first of the military depots to be located in the area. It is also the first to be inactivated. This is unfortunate for the area economy to the extent that the workers cannot be employed by other industries in the locality, and at the moment there is no other expanding industry capable of absorbing the number of workers who will lose their jobs. A few who are employed in maintaining Arsenal facilities may be re-employed at Hill Field.

The Ogden Arsenal is an Army ordnance installation located ten miles south of the City of Ogden and immediately adjacent and to the west of Hill Field. It was officially activated on April 22, 1920 as an aftermath of World War I. Construction was slow and almost three years passed before the first group of buildings - consisting of 35 magazines, administration and utility buildings - were completed. In 1925 it had the distinction of being the first major installation in the United States to be commanded by a non-commissioned officer. It was first designated as an ammunition storage depot with initial employment of 25 employees. In this capacity it stored unused ordnance supplies such as ammunition that were surplus to the war needs. For a number of years, until October 1938, it was used mainly as a storage point for excess and obsolete ordnance materiel. At that time an industrial bomb-loading plant was activated at the Arsenal capable of loading 100 to 2000 pound bombs.

As World War II approached a program of modernization and rehabilitation of the facilities at the Arsenal was started. This took place mainly in the years from 1939 to 1942. During this period modern buildings were

constructed, depot facilities were modernized, and new roads were constructed.

By September 1941 the Arsenal was assembling fragmentation bombs and operating loading plants for 20mm and 37mm shells. By December 1941, as the country entered upon the second World War, the Arsenal had expanded far beyond its original mission as an ammunition storage depot to become an extensive ordnance plant. Under its prewar mission employment was nominal with only about 100 persons employed. With the expansion that resulted from the War effort, employment mushroomed to a peak of 6,100 civilians and 35 military personnel.

By late 1943 the industrial operation had been discontinued and the Arsenal had been redesignated as a master depot. Operations were limited to the storing and distribution of vehicles, ammunition, small arms, artillery, and miscellaneous Ordnance Corps supplies.

From July 6, 1944 to June 30, 1946 the Remington Arms Plant, then operating in Salt Lake City, was under the direction of the Arsenal. In December 1946 control of the Tooele Ordnance Sub-Depot was also transferred to the Arsenal.

By the end of World War II the number of employees had decreased to approximately 1200. With the subsequent outbreak of the Korean conflict employment again increased but it never approached the numbers employed at the peak of the earlier war. Its maximum employment during this latter period was reached in early 1953 with a peak of 3000 employees. At this time the Arsenal had reopened the ammunition manufacturing plant. Such varied types of ammunition as the MK11 tracer, hand grenades, 60mm illumination shells, 37mm shells, and 81mm mortar shells were produced from April 1951 to June 1954.

Early in the fall of 1954 the Army indicated that it would discontinue

all ordnance functions at the Arsenal. At that time employment was down to less than 500 people, with the majority of workers engaged in maintaining the buildings and grounds. Department of Defense plans in December 1954 called for the transfer of all the Arsenal facilities to the Air Force effective February 1, 1955, at which time it would be placed under the administration of Hill Field to be used for Air Force purposes. The only Army activity scheduled to remain is a small Transportation Corps railway equipment repair shop employing about 100 employees. This shop supports military rail equipment west of the Mississippi River by providing supplies, and through rebuilding parts, or overhualing major equipment.

The physical facilities of the Arsenal are quite extensive. The post proper covers 2,720 acres with an addition 771.14 acres consisting of an area called Military Springs located several miles away at the mouth of Weber Canyon. There are 705 structures on the Arsenal grounds of which 630 are of permanent-type construction. Of these, 62 are warehouses with a total of 850,000 square feet of covered storage space. If these facilities are added to those of Hill Field, as planned, it will become one of the largest depots in the Air Force.[1]

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1. The information presented was obtained by the author through personal interviews with Arsenal officials and old employees prior to its deactivation.

CHAPTER II

HILL AIR FORCE BASE AND THE AIR FORCE LOGISTICAL SYSTEM

The Headquarters, Ogden Air Materiel Area, or OOAMA, is the major Air Force logistical [1] organization located at Hill Air Force Base. The principal mission activities of the Materiel Area are often referred to collectively as "the depot".

Without the Ogden Air Materiel Area, employment at the base would be very nominal. To understand why large numbers of people are employed at Hill Field it is necessary to know something about the Department of the Air Force and more specifically about its logistical system, as well as the functions that are performed at Ogden.

The United States Air Force is an organization designed to carry on defensive and offensive aerial warfare as conditions require. To accomplish this mission it naturally has airplanes. They are many in number, type, condition, age, and design. New ones must be procured from time to time; old ones must be repaired, modified, or otherwise maintained in the most effective condition for the purpose for which designed. Parts to accomplish the repair and modification of aircraft must also be procured, stored, and issued as required. Even these parts may, and do in some cases, require periodical maintenance and repair. Aircraft consume

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1. Logistics - That part of the entire military activity which deals with: (1) Design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of materiel. (2) Induction, classification, training assignment, welfare, movement, evacuation and separation of personnel; (3) acquisition or construction, maintenance, operation, and disposition of facilities; and (4) acquisition or furnishing of service. It comprises both planning, including determination of requirements, and implementation (18, p.56). The Air Materiel Command is the Air Force agency responsible for all logistical functions other than design, development, and personnel matters.

huge amounts of fuel which must be available where and when needed and in adequate quantities.

The same support must also be provided for other equipment such as vehicles. The Air Force, for example, has thousands of these of every description, such as: fork lifts, snow plows, trucks, personnel carriers, cranes, ambulances, bicycles, oil trucks, and tractors, to name but a few.

The Air Force also requires immense quantities of food and clothing for its personnel. Specialized personal equipment of a variety of types must be provided its officers and men so that they may properly perform their duties. Examples of this equipment are: radio earphones, sun glasses, cold-weather flying clothing, chronometers, and survival equipment. Regulations, manuals, and various instructional directives must be printed, stocked and distributed.

If these things are to be properly accomplished a system must be provided for the purpose. This the military refers to as a logistical system. The Air Force has established a single agency to effectuate this. The agency is the Air Materiel Command, the primary logistical organization of the Air Force. The single major logistical agency is not necessarily a characteristic of military organization. The United States Army, for example, has a number of separate logistical agencies, such as: the Chemical Corps, Engineer Corps, Signal Corps, etc. As was observed in the previous chapter in the discussion of the Utah General Depot operations, each Corps is responsible for a specialized class of property. This division of logistical responsibility in the Army is essentially along functional lines.

The Air Force has seen fit to center that responsibility principally in one agency. Thus, with the Air Force as the predominant service and with a single major logistical agency, it is not surprising to find that

it is the largest business in the country. With total assets of $30 billion it has $6 billion more than the combined total of the two largest private corporations in the country: Metropolitan Life Insurance Company, and the Bell Telephone System (15, p.4).

To perform its function during its last full fiscal year (July 1, 1953 through June 30, 1954) the Air Materiel Command spent $11.4 billion. Obviously in a business of such immense size there must be some pattern in the division of responsibility and of operations. The Air Materiel Command divides its responsibility among subordinate organizations on a commodity basis as distinguished from the functional, or end use of the item, basis followed by the United States Army. Operationally the Air Materiel Command is divided into eight continental sub-commands, or Air Materiel Areas, one overseas area in Spain and seven Air Force specialized depots.

Under the commodity-management concept adopted by the Air Materiel Command, each depot, or Air Materiel Area, has specified commodities for which it has management responsibility. For example: Rome Air Force Depot is responsible for ground-navigation radio systems, Wilkins Depot for air base and hangar equipment and military uniforms, Oklahoma City Air Materiel Area for Boeing B-52 aircraft components and General Electric J-47 jet engines. These are mentioned merely to illustrate how the responsibilities are divided. Actually each specialized depot, or Air Materiel Area, may have the management of thousands of items, or upwards of a hundred classes of items. The meaning of management as used here will be discussed more specifically when the function of a specific Air Materiel Area, the Ogden AMA, is considered. As a general statement it can be said that each Air Materiel Area has management responsibility for prime property classes assigned. In addition to this an AMA also

has three other major responsibilities:

(1) World-wide logistic support responsibility for assigned weapons systems.[1]

(2) Zonal responsibility for designated property classes.

(3) Special logistic support responsibility within as assigned geographic area.

At any one point in time each depot has certain designated prime and zonal assignments. As these assignments have an important bearing on the work-load of a depot they will be discussed in some detail in this chapter. The discussion will be oriented toward their effect on the Ogden Air Materiel Area.

PRIME RESPONSIBILITY

At the end of calendar year 1954 OOAMA had prime responsibility for the following items:

Northrop F-89 Aircraft. OOAMA has prime maintenance responsibility. The F-89 is a modern twin jet fighter aircraft used principally as a defensive all-weather interceptor plane. It is probably the most heavily armed of our current fighters. The depot has prime responsibility for the supply and maintenance of parts for the B-62 (or MS-62) guided missile, as well as for the F-89, manufactured by Northrop Aircraft, Inc. It is also prime in the maintenance of the complete missile. The B-62 is a long-range ground-to-ground strategic missile, and is commonly known as the SNARK.

McDonnell F-101 Aircraft. This is a supersonic fighter of advanced design that is not yet fully in production. As it comes into the

1. A weapons system is an instrument of combat such as an air vehicle together with all functioning equipment, the skills necessary to operate the equipment and the supporting facilities and services required to enable the instrument of combat to be a single unit of striking power in its operational environment.

system it will be used to replace certain of the present day fighter aircraft. Responsibility of the depot covers the complete aircraft and the supply and maintenance of parts.

Boeing B-17. This is an obsolete bomber for which OOAMA is prime although there are relatively few of these aircraft in the Air Force.

McDonnell XV-1 (XL-25) (or Convertiplane) aircraft. This is an experimental aircraft combining the characteristics of both conventional airplane and a helicopter.

Auxiliary aircraft engines and liquid fuel. This class of items is limited to the liquid fuel type auxiliary engines used in connection with assist takeoff units for aircraft.

Aircraft wheels, brakes, skis, floats, and maintenance parts. Responsibility in this case covers all of the items irrespective of the aircraft on which they are used.

Aircraft hydraulic struts, actuating cylinders and maintenance parts. Again Ogden is responsible for all such items irrespective of the aircraft of which they may be a part. It also has prime procurement responsibility for these items in addition to the supply and maintenance prime function.

School equipment. Items used for training of personnel. Some supplies and equipment may be property no longer usable for original purposes, such as, aircraft that are not feasible to put in flying condition. These are, however, often excellent material for training purposes and are used whenever possible.

Individual and crew instrument flying, landing, and navigational trainers and maintenance parts.

Bombing and gunnery training aids and devices, maintenance parts

and identification material.

Miscellaneous training devices and their maintenance parts.

Radar and radio trainers, training equipment and their maintenance parts.

Being "prime" in these items does not mean that the Ogden Air Materiel Area does all things at all times with respect to these items. The meaning can perhaps be best explained by using the F-89 as an illustration. The requirements for F-89, as well as other types of aircraft, are determined (within budgetary limitations) in light of world conditions and within the scope of the Air Force mission as assigned by the Joint Chiefs of Staff. This evaluation is made at regular intervals by the Air Staff of the Headquarters United States Air Force.

If world affairs require greater emphasis on strategic bombing, an increased number of B-36 long-range inter-continental bombers, or its newer, faster replacement: the high-flying eight-jet B-52, will be programmed and F-89 procurement may be cut back. On the other hand, if the apparent development of long-range bombers by possible enemy countries is such that greater emphasis must be placed on that part of the Air Force mission calling for the air defense of the continental United States, then the requirements for all-weather interceptor fighter aircraft, such as the F-89, may be increased.

At the same time that the USAF Headquarters projects the number of F-89 aircraft required for a given period, it also projects their utilization by establishing their flying-hour program and determines where and in what numbers they will be used throughout the world. The Air Materiel Command Headquarters then makes the necessary contractual agreements for such additional new aircraft as may be required. Contracts will normally be made with Northrop Aircraft, Inc. for the manufacture of the additional

F-89 aircraft deemed necessary. The term "normally" is used, for on occasion contractual arrangements may be made for production of an airplane by a company other than the one which originally designed it. In any event, once the contract has been executed for the required number of new F-89 aircraft, responsibility then rests with the Ogden Air Materiel Area.

PROCUREMENT RESPONSIBILITY

At this point in the procurement of new aircraft, Ogden AMA has a procurement administration and surveillance responsibility regardless of the geographical area in which its prime aircraft is fabricated. This responsibility has several facets. In general it is carried out by a subordinate organization located in the Northrop plant at Hawthorne, California. This organization is termed the Air Force Plant Representative Office. Supervision and policy direction over the Air Force Plant Representative Office is retained by the Ogden Air Materiel Area while normal day-to-day surveillance of contractor's (Northrop Aircraft, Inc.) operations is carried on by the Air Force Plant Representative and his staff.

To perform his duties the Plant Representative has several divisions in his office. The principal ones are: Contract, Quality Control, and Production.

Contract Division

The Contract Division participates in the original negotiations between Headquarters, Air Materiel Command and the contractor. It recommends to the Ogden Air Materiel Area and the Headquarters, Air Materiel Command such subsequent changes as may be necessary to maintain contractual coverage consistent with the production program. Authorization of expenditures for facilities construction, approval for payment for delivered products,

and approval of requests by the contractor for use of overtime, or other unusual and necessary deviations from the provisions of the contract, are acted upon by this division.

Quality Control Division

The Air Force must insure that it not only receives the item that it has contracted for, but that the close tolerances and detailed specifications governing the fabrication of the item - in this case F-89 aircraft - are fully met in its production. This assurance is obtained by a corps of inspectors who work under the Quality Control Division of the Air Force Plant Representative's Office. They perform continuous inspection beginning with the individual parts to the completed plane. It is neither necessary nor feasible to inspect each and every article produced. Sample or statistical quality checks are made, and where an abnormal number of items must be rejected because they cannot meet quality tests, increased sampling or even 100% inspections are performed. These more detailed inspections are continued until the contractor can again maintain quality production.

This division also performs continuous surveillance over the contractor's inspection system and personnel which further insures an acceptable product. In some instances sub-assemblies are produced by other contractors for Northrop at distant points. Frequently, it would be too costly to disassemble these for inspection at the Los Angeles plant before they are incorporated into the F-89. In such cases the Quality Control Division makes arrangements for source inspection by other Air Force quality control personnel located adjacent to or in the producing plant.

Production Division

Aircraft are produced against a pre-established schedule. This is

the basic planning document for all the follow-on activities. As an F-89 comes off the line at the Northrop Plant and is accepted by the Air Force, it has already been committed to a specific tactical organization. Maintenance parts in adequate quantities must be prepositioned with the organization, pilots must be "checked-out" to insure familiarity with the aircraft and its characteristics (frequently the organization receives the F-89 as a replacement for an older type plane), mechanics must be trained in the maintenance of the F-89. If it is a replacement for a reciprocal engine airplane the normal gasoline must be replaced with jet-engine fuel. These actions are normally the responsibility of the using organization.

All of these requirements are geared to the contractor's delivery schedule and they all take planning and lead time to be properly accomplished. If they are to be properly related and effectively accomplished it is extremely important that aircraft be delivered on schedule. The Air Force Plant Representative at Northrop has a Production Division that insures that the contractor will meet the production schedule. This office coordinates and expedites actions that might affect production to insure delivery on schedule. In doing this the personnel of this Division work with contractor's employees to expedite the solution of technical problems. They frequently call upon other Air Force agencies to assist them, such as the appropriate staff office of the Ogden Air Materiel Area, the Research and Development Command, or the Headquarters, Air Materiel Command. Should it appear that additional facilities such as machine tools, or new factory or office space are required by Northrop to maintain schedules, or to meet future commitments to the Air Force, the Production Division will review the requirements and recommend appropriate Air Force action.

This division also monitors the flow of government-furnished aircraft

equipment, or GFAE as it is commonly termed, to the contractor. These are items such as: radio and radar equipment, aircraft instruments, engines, and many others of similar nature. GFAE items are procured directly by the government and furnished to the contractor for inclusion in production aircraft. The contractor thus has no control over their availability. Items may be provided as GFAE for any of a number of reasons. It may be because it is more economical, or perhaps because adequate quantities are already in the Air Force supply system. In other instances it is because of limited availability and competitive requirements for the item within the Air Force. Items classed as GFAE in general have a common characteristic - the item is common to two or more types of aircraft. It is an important function of the Production Division at Northrop to see that these GFAE components of the F-89 are available to the contractor in time and in the quantity required.

The surveillance of the contractor producing the F-89 is only a part of the world-wide logistic support responsibility of the depot. Considering the number of people performing the function it is very small in the overall depot operations. Only about a hundred people are located in the Plant Representative Office at the Northrop plant, and some 50 more at Hill Air Force Base. In dollars involved and management responsibility it is of considerable importance. The personnel that perform this function are similar in skill and training to those found in the purchasing activities of large corporations. A few of those at Hill Field have been trained locally on the job. The majority, however, have been brought to Utah because of the absence of individuals with such skills in the local labor force.

SUPPLY AND SERVICES DIRECTORATE, OOAMA

The Ogden Air Materiel Area has many additional responsibilities,

other than procurement, as the prime depot for the F-89. It was previously noted that the Headquarters, USAF periodically, usually annually, determines the number of flying hours each type of aircraft will fly in a forecasted period, and their world-wide location. From this basic planning information, in the case of the F-89 for example, the Supply and Services Directorate, Ogden Air Materiel Area, computes the proper quantity of items, the bits and pieces as well as major components of the F-89, required to support the aircraft operational program. It will, at the same time, program the availability of the items.

This is anything but a simple problem. When an individual finds something wrong with his automobile he will find a garage a few blocks away ready, willing and generally capable of repairing it. Ordinarily he can drive it until the trouble appears, with relatively little danger to life or investment. This is not true of the complex modern military airplane. Its use and world-wide deployment add to the complexity of the problem. Even the motorist finds the maintenance more complex and difficult if the car breaks down while he is motoring on the continent or in Japan or elsewhere in the world.

Components of the airplane wear out at different rates. The wing of an airplane will generally fly many more hours than a generator. The life of condensers in the electronic mechanisms is considerably longer than the tubes. Wear-out rates are computed for each item on an actuarial basis. Despite these complexities, the OOAMA Supply and Services Directorate must compute the quantity of each F-89 part or component needed based upon the projected number of flying hours the F-89 will be flown during the stated period.

It would be relatively simple if the results of this calculation could be compared against the on-hand inventory of each item and

arrangements made for the procurement of any deficiencies. But many more complexities arise before the quantity to be procured can be determined. The wear-out rate for the assigned flying-hour program is but the first step. With the dispersal of the aircraft throughout the world, varying stock levels must also be maintained at widely dispersed points, and the requirements to meet these stock levels must be computed. The effect of pipeline requirements must be ground into the computations. If a part is computed to wear out once in each month of flying, and the pipeline time for the movement of the part from the United States depot to the overseas using organization is two months, then there must be two more in the pipeline at all times, and thus two more added to requirements. Many of the parts that wear out or develop defects can be repaired at only a fraction of the initial cost. The required quantity of these reparable parts must be determined. The repair facilities or capabilities of the using organization and the particular repair depot must be considered in the computation of requirements.

This is a very simple explanation of the determination of requirements, but it does illustrate to a degree the complexities and problems that must be faced. These complexities and problems have an important affect on the labor requirements of the Ogden Air Materiel Area.

The computation of requirements is only one facet of the Air Materiel Area, and therefore of the depot job, and it is more than a one-time annual problem. To keep the aircraft flying the depot must insure that the right quantities of the right part are in the right place, at the right time. There must be a constant awareness of requirements versus available quantities. In addition, much of the depot effort is expended in the physical handling of the supplies. They must be received, stored, often unpacked and repacked, and shipped as the needs of the using

organizations require. The depot must receive the defective or broken parts, inspect to determine those that are reparable, schedule them for repair, provide all the bits and pieces that will be needed for the repair program. The non-reparable items must be moved to salvage for disposal action. The repaired parts must be processed back into the system for reissue. This is a very brief description of how OOAMA carries out the supply portion of its responsibility for the support of its prime aircraft.

The performance of these functions requires a variety of skills. Warehousemen must be available to handle the supplies. Numerous clerks perform the infinite number of computations required and process requisitions. Electrical accounting machine operators are needed to maintain inventory records and perform complex computations. Skilled supply technicians review requirements, inventory levels, and determine wear-out and consumption rates. Truck drivers and fork lift operators move the supplies and equipment stocked in the depot. These are but a few of the skills required.

MAINTENANCE ENGINEERING

Another very important part of the prime responsibility is performed by the Maintenance Engineering Directorate in the depot. In number of people employed this is by far the largest department. About 60 per cent of the civilian work force are assigned to this Directorate.

This can be compared to the slightly more than 20 per cent employed in the Supply and Services Directorate (previously discussed), approximately 1 per cent in procurement functions, and 19 per cent engaged in housekeeping jobs, and staff and other organizations supporting the main mission activities.

The Maintenance Engineering Directorate employs most of the mechanics,

electricians, and similar skilled trade workers employed at Hill Field. There are also more unique skills in the maintenance activity such as: optical and instrument technicians, industrial, electrical, and mechanical engineers, production-control experts, and quality-control inspectors. The usual complement of clerks and supervisors round out the organization.

The maintenance work of the prime depot develops in volume as soon as the first production aircraft comes off the contractor's line and is released to the tactical organization. Considering the preplanning that must be done, responsibility actually begins many months prior to this. The management of the depot's prime aircraft maintenance continues as long as a single plane of the type is in the Air Force system even though no longer being produced. In other words, for each airplane there is a logistical job to be done by a depot from the airplane's cradle to its grave.

The OOAMA responsibility for the B-17, which is rapidly being phased out of the active inventory, is an example of this continuing responsibility. This airplane has not been produced for some years. The Ogden Air Materiel Area must continually review the logistical position of its prime aircraft (whether F-101, F-89, or B-17) from the design stage, through the building of a prototype or experimental model, to flight testing (the stage to which the Ogden-sponsored F-101 has progressed), and production and service use (the position of the F-89), and phase out (B-17). Thus, the Ogden Air Materiel Area has currently, in one aircraft or another, prime management at every stage. The B-17 is phasing out of the system, the F-89 is in production and active use, and the F-101 is about to phase into the system.

In considering the depot's supply responsibility it was observed that the Air Materiel Area must be ready at the proper time with the required

aircraft spares to support the operations of the Air Force command using the depot's prime aircraft. This is also true for the ground-handling equipment that is generally unique to the aircraft that it will support, and the technical handbooks used by personnel maintaining the aircraft. The engineering planning and direction required to relate these to specific aircraft is done by the Maintenance Engineering Directorate in the Air Materiel Area. This does not cease with the initial production as there are continual technical improvements being proposed and many incorporated into in-use aircraft, such as the F-89. It is even possible for aircraft in the status of the B-17. Every suggestion or recommendation must be given a detailed engineering review by this Directorate before it is approved for incorporation either into new production F-89, or on in-use aircraft under a retrofit program. As new aircraft are placed in service and deficiencies are observed by the using organization, a system of UR, or Unsatisfactory Reports, has been provided to channel the problem into the prime Air Materiel Area Maintenance Directorate where an engineering fix is worked out.

The scheduling of production of new F-89 is established by the Headquarters, Air Materiel Command. The Ogden Air Materiel Area action then follows with the preparation of schedules for the maintenance support of the F-89 through IRAN and modification.[1]

Related to this is the responsibility to prepare time-phased schedules for the movement of aircraft from the using organizations to the depot for overhaul. The objective is to arrange a schedule that provides

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1. IRAN is the short title for a maintenance concept of Inspecting and Replacing as Necessary. This accents the idea that only necessary repairs will be performed when the airplane is overhauled in a depot. The previous concept was a much more expensive one that required a complete overhaul as the airplane was processed through the depot shops. Modification is any change in the configuration of an airplane.

for a constant percentage of the total inventory of a specific aircraft to flow through the depot shops for reconditioning or modification. Thus, the using Air Force command can keep its combat effectiveness at a relatively constant level, while cycling one lot after another of its planes into the depot.

From these IRAN and modification schedules the using organizations know in advance how many of their F-89 aircraft will be unavailable for use at any one time. The depots having prime responsibility for common-use items such as engines can, on the basis of this guidance, gear their operations for the proper support of the aircraft.

OOAMA must also develop support plans for the field maintenance of its prime aircraft. This level of maintenance is simpler than that accomplished in the depot shops and is normally performed by the using organization.

Concurrently with the establishment of maintenance schedules the prime depot arranges for the facilities where the work will be accomplished. A major portion of the F-89 overhaul will generally be done in the Ogden Air Materiel Area shops. Where local shop capacities have already been absorbed by prior commitments, or where the work can be done more economically, arrangements can be made for scheduling the airplanes into another depot, or the work may be performed under contract in the Northrop plant.

In considering the supply facet of depot operation it was observed that aircraft components, or the "bits and pieces" that go to make up the complete aircraft, also have repair programs. It was noted in that discussion that the depot supply organization computes the quantity of each item Air Force-wide that will require repair in a given period. Some items will be worn out beyond repair, while others will require only

minor repairs that can be done by the using organization. An adjustment is therefore made to determine the net number of reparable "carcasses" likely to be received in a given period in the depot. The Maintenance Engineering Directorate applies the net repair requirements against its capabilities, manpower and facility-wise, and establishes schedules for the repair of the items in the Ogden shops. Here again, if requirements are in excess of capacity, or it is more economical to do so, OOAMA may arrange for other depots or private contractors to do the repair work. In the latter case much of this work may, from time to time, be performed by contractors in the local area. If the items are of a commercial nature they are generally scheduled for contractual, rather than depot maintenance as a matter of policy.

In this discussion the Ogden Air Materiel Area prime responsibilities have been related essentially to the F-89 aircraft. This has been used merely as an example. Much the same pattern is followed for all the other items for which the depot has prime responsibility.

GEOGRAPHICAL SUPPORT

To this point the prime logistical responsibility of the Ogden Air Materiel Area has been considered. There are also other functions performed by this command. One of considerable importance stems from the geographical responsibilities of the depot. Since the Ogden Air Materiel Area covers one of the largest geographical areas in the Air Materiel Command, and this area is a logical corridor of enemy approach to the United States, the support of Air Force units in the area takes on added importance. The area extends through eight western states: Washington, Idaho, Montana, Utah, Wyoming, Colorado, and North and South Dakota, and all of Alaska. Within this territory the Air Force has many kinds of aircraft to be maintained. It has numerous isolated aircraft-control-and-warning

sites to be supported. Great variations in weather conditions are characteristic of the area. All of these conditions accentuate the logistical problems that must be met by the Ogden Air Materiel Area. The extent of the area supervised, the type of Air Force organizations in the area, and the kind of equipment and supplies they require all have an affect on employment at Hill Field.

The Ogden AMA represents the Air Materiel Command in assisting or solving logistical problems of the Air Force activities in its geographical area. Teams of supply and maintenance technicians from Hill Air Force Base continually visit each installation to give technical help to the local organizations. Any logistical problem, no matter how large or small, receives the attention of these teams. If, because of the type of equipment or aircraft in use, or for other reasons, the problem is beyond the capability of these technicians or the organizations at Hill Field, the visiting team requests assistance from the appropriate prime depot or other AMC agency. The bases are encouraged to bring their logistical problems at any time to Ogden Air Materiel Area. They are considered to be the AMA's "customers" and service to the customer, and customer satisfaction are basic objectives of all OOAMA action.

Frequently organizations in the field will have individual aircraft requiring overhaul beyond the field capabilities. Because of lack of quantity or timing it may not be desirable to keep the airplane inoperative until it can be phased into the normal cycle maintenance program. In such cases the airplane will be repaired in the Ogden shops. For this purpose OOAMA has a special shop area set aside for area support on a job-order basis.

OOAMA also maintains small groups of engineers or technicians with specialized capabilities to support area bases where normal activity

would not require full-time utilization at the individual bases. Thus, the engineering plans for major modification, or replacement of telephone, or other communication systems such as, radio-range and marker-beacons for bases in the area, are prepared at OOAMA. The engineering guidance is carried on throughout the construction period and until placed in acceptable operation. Also, actual overhaul, or construction, or, as in the case of teletypewriter circuits, maintenance is performed by OOAMA personnel.

Any limitation or reduction in the area responsibilities of OOAMA would be immediately reflected in Hill Field employment. It would affect persons whose place of work is on the installation, as well as those who spend most of their time on field trips. This work requires individuals of high caliber, and with unique skills not found in any number in the relatively limited industrial concerns of the local area. Opportunity for further employment in and about Ogden would be extremely limited and they would in most instances migrate to more industrialized communities.

ZONAL RESPONSIBILITY

A third function of the depot is its zonal responsibility. Prior to March 1949 each depot in the Air Materiel Command stocked all classes of items. Studies indicated that savings could be obtained through inventory reduction if stocks were centralized to a greater degree.

A two-zone plan was instituted March 8, 1949 under which the United States was divided into two geographical areas, one east and one west of the Mississippi River. Each zone was to stock all property classes, but with designated depots in a zone specializing in certain specific classes of stock (4, p.136). OOAMA has been assigned zonal responsibility for certain property classes under this concept. It is charged with depot maintenance, storage and distribution, but not commodity management of the

items in its assigned zonal classes. Commodity management, it will be recalled is the principal characteristic of "prime" property class responsibility.

Prior to the development of the prime concept, all property management was performed by Headquarters, Air Materiel Command at Dayton, Ohio. When this was decentralized to the depots, world-wide prime, or commodity-management responsibility for each class of property was assigned to a specific depot. Under the zonal concept the prime depot also performs the zonal functions for the designated property in its zone with a second depot functioning as an "opposite" or zonal depot in the other zone.

The bi-zonal plan has subsequently been modified for certain property classes where it has been found more effective to have only one depot in the United States store and distribute the item. In general this exception has been limited to commercial type items for which local purchase by the using organization has been authorized. In such instances depot stockage is practically eliminated, except for surplus, reserve, or temporary storage requirements.

OOAMA has western-zonal responsibility for the following classes of property:

Parts for the B-57 Martin aircraft.

Parts for the F-84 Republic aircraft.

Parts for the C-82, C-119 and common items for these Fairchild manufactured aircraft.

The complete R-2800 reciprocating engine.

Training aids instruments and maintenance parts.

Commercial electrical equipment and maintenance parts.

Electrical supplies.

Flying field night-lighting equipment and maintenance parts.

Electrical wire and cable.

Photographic aerial equipment and maintenance parts.

Photographic ground equipment and maintenance parts.

Photographic supplies.

Motion picture equipment and maintenance parts.

Tailored paulins and covers.

Survival equipment and parachutes.

Railroad equipment and maintenance parts.

OOAMA is the stock-control point in the Western Zone for Army-purchased Engineer Corps items, except spare parts. It is also the Western Zone supply point for all of the items for which it has prime responsibility, as previously mentioned. In general, zonal responsibility carries with it a responsibility for the specialized depot-maintenance of the same items.

The number of classes and types of property assigned to the depot either as prime or zonal have a very significant bearing on the magnitude of workload for the depot, and also the stability of the workload.

CHAPTER III

SOME FACTORS AFFECTING EMPLOYMENT AT HILL AIR FORCE BASE

Many factors influence employment at a military depot. Some are the product of changes in world affairs that culminate in war, or national emergency. Others stem from local depot action. Still others are the result of policy changes of higher headquarters, some of which are caused by changing military concepts.

INFLUENCE OF WAR

The pressures of war bring on a rapid build-up in depot employment. In the following chapter where employment trends are discussed in more detail, instances can be observed where employment increased over 840 per cent in a twelve-month period. This generally occurred in the early months of the emergency. It is not possible at that stage to anticipate the progress of battle, or the extent of the build-up required. At the same time supervisors at all management levels, as a protective measure, encourage an employment program that will meet all contingencies. The new employees are usually untrained and their production is low. Thus, many are hired to do the job that only a few will be needed to perform as proficiency is developed and workload can be accurately forecast. Quite often the initial build-up is so rapid, and so many employees are hired, that depot organizations soon pass the point of diminishing return in adding employees during the initial build-up period. That point is reached when new employees are hired faster than they can be trained or organized, and their presence becomes a liability rather than an asset to the organization.

Even before the crest of the emergency is reached employment begins

to decrease in a depot. This can be traced to over-employment in the build-up period and the better planning that is done as the war progresses. The earlier over-employment accentuates the reductions required in these later periods. At this stage, there is one retarding influence to reducing employment. This is the strong tendency on the part of practically all supervisors to retain more workers than necessary as insurance against sudden additions in workload in the future. There is also evidence that some supervisors intentionally retain excess personnel as a cushion against future reductions.

With the end of the emergency the pendulum swings too far in the direction of rapid reductions in work force. Reductions would be expected to generate at the organizational level where the work is performed and be commensurate with reductions in workload. They rarely happen in this manner, however, because of the normal supervisor resistance to releasing workers as mentioned above. Thus, reductions in employment levels in the post-emergency period are invariably directed by higher headquarters either because of the obvious overmanning in this period of declining workloads, or because of budgetary limitations. Such directed reductions are seldom related to local work requirements and therefore tend to be overly drastic. Some rehiring often follows later as depot operations adjust to peacetime conditions and the longer-term workload can be gaged.

These violent fluctuations that occur during, or immediately following periods of war, or similar national emergencies, are difficult to control. They unquestionably affect the community to a very material degree economically. The nature of the causes and the environment in which they occur leave little room for constructive community action.

TECHNOLOGICAL AND MANAGEMENT IMPROVEMENTS

In the normal peacetime operation of Hill Field there are technological or management improvements being applied some place in the organization at all times. They of necessity affect some of the work force. If of sufficient magnitude, either individually or cumulatively, they may result in overall reductions in employment. The depot administrators make a special effort to relocate workers whose jobs are eliminated in order not to discourage or retard improvements in the future, and because of the value of the individual's skills to the service. With the exception of those improvements of exceptional magnitude, locally-directed operating efficiencies seldom result in immediate discharge of workers. They often permit the assumption of more workload without the normal increase in personnel. The personnel savings are applied in some instances to accomplish work not previously performed because of personnel limitations, or work that is being done by more costly means such as overtime, with correspondingly higher pay rates. Often the personnel savings are used to perform new functions for which additional manpower authorizations either have not, or cannot, be provided.

Records at Hill Air Force Base indicate that technological and management improvements have seldom resulted in the direct discharge of workers. Some improvements, of course, result solely in material savings and do not affect labor at all.

The operating improvements are quite substantial in the course of a year. The Comptroller, Headquarters, Ogden Air Materiel Area reported to higher headquarters savings totalling $6,171,200.22 in 1954. This includes materiel as well as labor savings. Although in those instances where workers are actually released the community may be affected

adversely, in the aggregate the improvements substantially favor the community. The Air Materiel Command is strongly cost-minded. Whenever possible work is allocated to the most efficient depot. Management at Hill Field is aware of this and tries to provide an atmosphere conducive to the development of such improvements. Where substantial savings can be shown the depot command at Hill Field is in an advantageous position to request additional work that would otherwise be assigned to competitive depots in the Air Materiel Command.

MAJOR PEACETIME FACTORS

The major fluctuations in Hill Field employment in peacetime have resulted from management decisions originating in the Headquarters of the Air Materiel Command and the United States Air Force. These have generally been decisions effecting internal realignments in the logistical system, or changes in operating procedures. Some of the principal changes of this nature that have occurred in recent years will be presented in the balance of this chapter as examples of how such changes take place. This is presented as a background for the material in Chapter IV.

The Decentralization Program

The Air Materiel Command Decentralization Program has been the most important single factor affecting Hill Field employment in recent years. The program was developed by the Headquarters, Air Materiel Command, and substantially completed in a period of two years. The plan of decentralization was originated in the early period of the Korean conflict with main implementation occurring in 1952, and continuing on through 1954. The final phases will probably not be completely implemented at Hill Field for several more years.

Before discussing the specifics of Decentralization, the author

believes that a brief consideration of the status of the Air Force logistical system in 1950 and 1951 is worth-while. In any event it should assist the reader in understanding the reasons why the Decentralization took place.

With the outbreak of the Korean conflict in June 1950 a tremendous load was placed upon the Air Force logistical system. At the same time that a full-fledged military engagement had to be supported in the Far East, the Air Force was required to deliver on relatively short order, aircraft and related materiel to outfit substantially complete air forces in most of the free countries of Europe. In addition, the Air Force was to expand from 49 wings in 1949 to the stated objective of a 143-wing goal authorized just after the Korean conflict began. The Air Materiel Command was at the time, and still is, the sole agency responsible for providing the procurement, supply and maintenance support for the United States Air Force. The requirement to support the three major objectives simultaneously was an almost insurmountable job for the Air Materiel Command.

It might be asked why an organization, the purpose of which is to meet such emergencies, should be overtaxed when the emergency arrives. To understand this it is only necessary to consider the public attitude toward military preparedness at the end of World War II. The nation had apparently won the last great war that would end all future wars. The general feeling of the country was that the objective had been fully achieved and all danger to United States' security eliminated. Some may have doubted if it had been done for all time, but many of these agreed that the job had been taken care of for the foreseeable future. There was a strong desire to eliminate all traces of the war, not the least of which was a substantial military organization. This thinking developed

a demand by the general public for an immediate demobilization with a sharp reduction in defense activities and their costs of operation.

In response to that demand the Air Materiel Command dissolved much of its capability by the wholesale release of trained, experienced personnel. It further economized by centralizing its administration and much of its operations in the Dayton, Ohio area. By early 1952 serious weaknesses were apparent in the AMC operations which raised a question as to the advisability of continuing the centralized organizational concept. It was apparent that the AMC headquarters organization, as then constituted, had reached, or even passed, its capacity to expand consistent with the growth of the Air Force.

Since the reasons for this limitation are material, the major ones are summarized here. To a more limited degree some of these are relevant to Hill Field as factors that could restrict its future growth.

There was a very limited number of qualified personnel in the Dayton area to meet the very large demand for highly qualified supervisors, administrators, and technicians. Being a highly industrialized area many other local businesses were also competing for the few available personnel.

Office facilities were seriously overcroded and few were available in the locality to meet the rapidly expanding need for additional space.

The huge volume of paper work flowing into the centralized operation was exceeding a million pieces per month and was fast becoming unmanageable.

The concentration of operating functions caused policy and planning to be slighted.

Flexibility and the capability to expand to meet increased logistical requirements were limited.

The centralization and concentration of activities subjected the Air Force logistical system to serious strategic vulnerability.

It became apparent to the top management of the Air Materiel Command at Dayton that the resources of the Command could be utilized more effectively. By retaining policy and management control functions in the Headquarters, Air Materiel Command at Dayton, and decentralizing operational functions and supporting services, greater efficiency and economy of operation could be effected throughout the Air Materiel Command. Decisions could be made faster, supervision could be improved and better guidance could be provided subordinate organizations. By transferring operating functions from the headquarters it was conceived that management could give more attention to policy and control, heretofore neglected to a degree, and they could be strengthened and greatly improved.

Prior to this time installations such as Hill Air Force Base were essentially central supply points and depot-level maintenance centers. During World War II the Ogden installation had become a sizeable activity despite this limited nature of its operations.

The implementation of the decentralization concept brought enlarged responsibilities and increased the work force at Ogden. Perhaps even more important to its long-term operation, it brought to the depot a greater control over its own operations and further assurance of continued operation at a substantial level of activity.

Headquarters, AMC operations were so vast and complex that the separation of those functions and organizations to be decentralized to subordinate commands could not be effected suddenly. It was necessary to proceed with the movement in increments over a period of several years. At the end of 1954 there were still some functional areas to be decentralized. It is indicated that these will be added to the depot mission as the details and problems of transfer are finalized.

Supply Decentralization. The first, and in numbers of employees,

the largest to be decentralized to the Ogden depot was the supply management function. With this transfer the Depot became a commodity manager for those items in which it was prime, such as: the F-89 aircraft, training devices, wheels, brakes, struts, etc. Under this concept the depot was responsible for: the computation of quantitative requirements, the preparation of budget estimates to meet those requirements, the preparation of the Buyer's Guide which lists all the items and the quantities of each that will be required during a given year, initiating purchase documents on items which must be procured, coordinating with procurement agencies on delivery schedules, price adjustments, shipping instructions, and contract status, controlling the distribution and redistribution of all items in its prime class category, and all the related actions necessary to insure that its commodities are available when, where, and in the quantity needed by the tactical and strategic Air Forces.

The Ogden depot was initially assigned nine sub-classes involving 32,642 items with an estimated procurement cost in 1952 of 69.4 million dollars. This resulted in an initial increase in the work force in June 1952 of some 90 persons. About half the positions were filled by persons transferred from Dayton to Ogden, the balance coming from outside recruitment and promotions from within.

As a basis for the assignment of property classes to specific depots consideration was given to the following elements: commodity grouping, vulnerability, location of the depot with respect to the manufacturer's principal place of business, depot facilities, maintenance requirements, space availability, future expansibility, engineering facilities, and the depot's public-works budget.

Decentralization of Military Defense Aid Program. Military Defense Aid Program functions related to the depot's prime classes were

decentralized concurrently with the general supply functions previously discussed. In this area the depot was assigned responsibility for preparing budget estimates, compiling the Buyer's Guide of items required to support the Foreign Air Program, determining mobilization requirements, and carrying out special projects related to the program.

Maintenance Decentralization. The initial phase of the supply portion of the Decentralization Program was completed by December 1952. The decentralization of maintenance functions was much slower in getting started. It was not until September 1952 that the first maintenance functions were transferred to the Ogden Air Materiel Area. Indicative of these new maintenance responsibilities assumed by OOAMA in connection with its prime class items are the following:

Approval of engineering change proposals.

Providing Air Force-wide technical assistance.

Making engineering acceptance inspections.

Determining Air Force-wide requirements for test and support equipment.

Determining training requirements to support its prime equipment.

Responsibility for investigating and processing accident and technical reports.

Determining equipment modification and modernization requirements.

Preparing work specifications.

Planning and scheduling overhaul, reconditioning, and modification in support of the contractual maintenance program.

Determining requirements for handbooks and parts catalogs and establishing schedules for their printing.

Subsequently some control of production functions were decentralized

under which OOAMA determined the program and scheduled specified aircraft for depot in-service reconditioning. Late in 1952 OOAMA was given responsibility for preparing the Master Repair Schedules for its prime equipment and materiel. By the end of 1952 OOAMA was developing its own layouts and preparing production schedules for aircraft engines. During this period it had also established a technical staff capable of providing industrial engineering consultant services to other Air Force activities. The initial cadre of personnel transferred from Dayton with the decentralization of maintenance functions totalled 24 with 40 positions finally authorized up to the end of 1954.

Procurement Decentralization. The implementation of the decentralization plan was less pronounced and occurred more gradually in the field of procurement. The depot has for a good many years procured so called "local purchase" items which are essentially commercial-type supplies and materiel used in its internal operations. Even prior to the decentralization it had executed its own commercial contracts for the repair of materiel and equipment that, either because of the nature of the item, or because it was more economical to do so, were scheduled to commercial contractors rather than to the depot shops. The decentralization of procurement functions was mainly a transfer of responsibility for the execution of call contracts. These cover follow-on spare parts and components required to support the aircraft in use by the tactical organizations. This occurs where original estimates for parts were too low, or where a subsequent increase in the program increased the original requirements.

In addition to call contracts two commodity groups, aircraft hydraulic struts and actuating cylinders, and school supplies, were assigned to Ogden for prime procurement.

Because of important policy considerations and certain procedural problems it has never been deemed advisable to include airframe contracting in the decentralization concept. However, the administration of the contracts after execution has been assumed by the depot. With the passage of time the depot has also participated to a greater degree in airframe contract negotiations.

Additional procurement responsibilities were given OOAMA in the fall of 1953 when the Headquarters, Air Materiel Command released to all depots the supervision of the procurement regions and plant representative organizations in the field. These are the organizations which administer the contracts in the field after they are executed by the Headquarters, AMC.

The procurement regions administer the many small contracts in designated geographic areas while each Plant Representative performs the same function for specified large airframe or prime contractor. With this functional transfer the Ogden Air Materiel Area was assigned the Northrop Aircraft plant at Los Angeles and the McDonnell plant at St. Louis. The first produces the F-89 airplane for the Air Force and the latter the F-101, an advanced supersonic fighter aircraft.

For some reason, not apparent, Ogden did not receive regional procurement responsibilities in its geographical area (eight states of Washington, Idaho, Utah, Montana, Wyoming, Colorado, North Dakota and South Dakota) as did the other depots for their areas. Although the Ogden depot had been responsible in this area for Air Force supply and maintenance matters for a number of years, the direction of procurement functions in the area was divided between two other major depots. In late 1954 the exception was corrected with the assignment of this procurement area to the Ogden AMA to be effective January 1, 1955. By this

time this action was technically not a decentralization of function but rather a transfer between depots. Under the original decentralization program procurement responsibilities in the Ogden geographical area were divided between the Oklahoma City and Sacramento Air Materiel Areas.

The number of workers mentioned in specific instances in connection with a decentralized function is only the initial cadre. By February 1953 a net increase of 230 in the work force was directly attributable to the decentralization program. This covered initial transfers of personnel authorizations, and in some instances, persons, for the mission functions and for some supporting organizations such as Statistical Services, the reporting workloads of which also increased with the decentralization. That is, this was the number of additional manpower authorizations granted Ogden AMA by the Headquarters, Air Materiel Command specifically in support of the decentralization program (See Table 1). In many instances additional personnel were needed to perform the decentralization functions. These were obtained by internal depot readjustments.

Assumption of Alaskan Air Command Logistical Support

Early in 1954 a realignment of responsibilities between two depots, the Sacramento Air Materiel Area and the Ogden Air Materiel Area, further enlarged Ogden responsibilities. In this case it involved the support of the Alaskan Air Command. Recognizing the advantages to be gained by centering that responsibility at Ogden, a point geographically closer to the user, the Air Materiel Command Headquarters directed the transfer of this responsibility to OOAMA. By February 18, 1954 a transfer plan had been developed between the two depots which provided, among other things, that the actual transfer would be effective April 1, 1954.

As a result of this transfer the Ogden depot became an important factor in the support of Air Force organizations outside the continental

limits of the United States. It required the establishment of an Overseas Shipment Control Office within the Directorate of Supply and Services at Ogden to monitor and control all shipments of Air Force supplies and materiel to the Alaskan theater.

Among the problems assumed was the unique requirement for the support of Project Mona Lisa. This project concerns the support of the many Air Force installations in Alaska that are located on the outer perimeter of the territory. Lack of transportation facilities limit the movement of supplies to two media: air and water. The air supply of these installations is restricted by weather, terrain, and limitations on the quantity and bulk of supplies that can be transported. The water routes are open only a few weeks during each summer. This means that each installation must obtain practically all the supplies needed to support it for an entire year in one shipment.

The Mona Lisa project thus requires the computation of all requirements for all these installations for a full year in advance. Supplies are either procured or furnished from stock and are assembled at the Seattle Port to be transported by a sea train of barges to the destinations. As only one trip can be made each year, all supplies must be in place prior to the shipment date and the destinations must be accurately identified. Any items overlooked can become a serious problem as air shipment can be used only for items of relatively small bulk and weight. Many of the items such as petroleum products and foodstuffs are extremely bulky. Thousands of tons must be transported under this project and must be unloaded at coastal points without adequate harbor facilities and under the most difficult conditions.

In addition to the job of procuring, assembling, controlling, and moving supplies for the Alaskan Air Command to the port, OOAMA also

assumed responsibility for providing technical assistance. Field teams of maintenance and supply specialists spend many days in the Alaskan area training and advising local personnel in technical supply and maintenance procedures.

The initial increase in the Ogden work force was only 24 personnel (23 civilians and 1 officer). This covered only a small part of the new workload. The organizations at Hill Field that are directly concerned with the support of the Alaskan Air Command are also responsible for the same functions in the eight states in the Ogden Air Materiel Area. Because of this dual responsibility and subsequent fluctuations in workload, it is not possible to segregate the total personnel that was finally needed to meet Alaskan requirements. Hill Field authorities state that it is substantially greater than the initial cadre earmarked for the purpose.

Transfer of B-26 Prime Responsibility

About the same time that the new responsibilities for the support of the Alaskan theater were assumed an attrition of other responsibilities was taking place at Hill Field.

For some time prior to this OOAMA was the prime depot for B-26 maintenance. This aircraft is a World War II bomber, now obsolete, which is being phased out of the Air Force system. It was used extensively in the Korean conflict and many were reconditioned for delivery to allied countries under the Foreign Aid Program. In the past many of these B-26's had been overhauled or reconditioned in the Hill Field shops. In February 1954 the Headquarters, AMC directed the transfer of logistical responsibility for this aircraft to the San Bernardino Air Materiel Area. The transfer only affected commodity-management responsibilities. Repair and maintenance work performed in the Ogden shops was to continue for the

time being, but under the direction of the San Bernardino AMA. In this instance no transfer of employees or manpower authorizations was made as internal adjustments of workload in each of the depots eliminated the need for such a transfer. Although no immediate decrease in personnel occurred, the loss of control over the maintenance program for the B-26 could affect employment at Hill Field in the future.

Optical Repair Shop

Indicative of the wide range of skills employed at Hill Air Force Base is the repair an production of optics and instruments of a similar nature, in the optical repair shop which was activated in June 1954. This was a new responsibility granted OOAMA at that time by the Headquarters, Air Materiel Command.

The first project for this shop was the repair of 5,077 items consisting of sextants, driftmeters and bubble chambers (1, p.119). This optical shop was started with nine optical technicians formerly employed at the Ogden Arsenal, and by the end of 1954 employed 24 persons. The original nine workers became available when the Army installation discontinued optical type work and released the workers. The fortuitous assignment to OOAMA of work requiring similar skills made it possible to retain in the Ogden Area the unique skills of these people which would otherwise have been lost for lack of local employment.

Should a private concern requiring similar skills be interested in starting business in the area there is available a potential source of skilled workmen some of whom could undoubtedly be encouraged to transfer. This could in the future be an important incentive for the location of a new industry in the area.

Federal Cataloging Program

This program is not limited to Hill Field nor the Air Force as it

applies to all defense agencies.

The Federal Cataloging Program originated with the Defense Cataloging and Standardization Act (Public Law 436, 82nd Congress). It applies to all agencies of the Department of Defense. Its purpose, in brief, is to develop for the Department of Defense a single catalog system for all supplies and a related supply standardization program. This means the utilization of the same stock number and identification data from initial requirements through final disposal, by all supply functions within the Department of Defense. The Air Force took the first step to implement its part of the program with the publication of a directive to all Air Force activities on August 7, 1952 (25). Work was still in progress at the end of 1954 and supervisors at Hill Field estimate that it will take several more years before all items can be classified on a current basis.

The Federal Cataloging Program has important implications to a depot because of the "prime" concept which controls much of the workload. Each depot is assigned certain property classes for which it is "prime". That is, property for which it acts as the commodity manager to procure, store, repair and issue to the Air Force tactical or strategic organizations for use or consumption. The number of prime classes assigned, type of property in each class, number of items in a class, complexity of items, need for, or frequency of repair, are all material in determining depot workload.

In carrying out this program the Air Force is converting all its existing property classes, stock numbers and item descriptions to the Federal Supply Classification. Many instances arise where several Air Force property classes are involved in a single Federal Catalog class. This means that certain items currently contained in multiple Air Force property classes will ultimately be transferred to a single Federal

Classification. In such instances items and responsibility will be withdrawn from the depot having prime or zonal control of the Air Force property class concerned and transferred to the depot assigned responsibility for the particular Federal Supply Classification class.

The conversion to, and utilization of the Federal Cataloging System will affect the existing property class assignments at depot level. Consequently, certain items currently contained in Air Force property classes will, through the conversion process, become the responsibility of a depot other than the one at which stock is currently located. The regrouping of property classes will also require the relocation or rewarehousing of stocks on hand in the depot to correspond with the Federal Supply Classification.

The number of classes of property ultimately assigned to the Ogden depot will have a bearing on supply, maintenance, and management functions. The type of property in each assigned class is also very important to depot workload. If a class is composed of items like airplane brakes, or items whose maintenance is largely sheet metal work, either of which can generally be maintained by the using organization, the workload will not generate in the depot. Even more complicated items such as radio communications sets will often receive much of their repair in the tactical organization. This is true where adequate test equipment has been authorized as standard for all using organizations. If the class covers property normally used commercially then it will generally be repaired locally by commercial contract rather than in the depot shops. With some commercial types of property, such as motor vehicles, even the parts will be provided by the contractor. Thus, for such property classes, there will be no stockage maintained and little supply or maintenance work for the prime depot.

Monetary Inventory Accounting

One of the more recent innovations to be introduced at Hill Field is monetary inventory accounting. In September 1953 30 manpower spaces were authorized to establish and operate the first phase of the new system. During 1954 24 additional spaces were granted Hill Field to implement subsequent phases.

Before the introduction of monetary inventory accounting, or MIA (redesignated Financial Inventory Accounting, or FIA, in January 1955 because of conflict with abbreviation for "Missing in Action"), inventory records were maintained solely on an item basis. Under that system when budgetary estimates were prepared in a depot, the dollar value of stock on hand, or in the system, was not available. Requirements were determined on an item basis. Then, after the deduction of existing inventory on an item basis, the conversion was made to dollars for the budget computation. Obviously under this procedure it was of little concern to the manager if the inventory was loaded with high cost, but little-used items. Nor was it always apparent to those responsible that in some inventory accounts, on the basis of dollar turnover of stock, there was the equivalent of thirty, or forty, or more, year's supply of property. With the information now available from the monetary inventory system the supply manager can pinpoint where inventory value is out of line with inventory turnover.

By the end of 1954 the MIA system had only been implemented in the depots. The initial phase was limited to central stocks stored in the major depots like the Ogden Air Materiel Area. The second phase provided for the inclusion of stocks used to support internal depot operations, such as the aircraft and accessory maintenance performed in the depot shops.

Eventually monetary inventory accounting will be applied to all Air Force activities. It will be several years before this can be carried out and the full value of the system become apparent. Unquestionably it should reduce costs in a depot through better inventory management. It should also result in lower inventories which may have some slight effect on depot employment. That is, if surplus or otherwise useless or excess stocks are disposed of less people will be required to store and preserve supplies. Personnel savings will, of course, be relatively minor compared to the savings in supplies and materiel costs.

SUMMARY

There is an infinite variety of factors that have affected the magnitude of operations at Hill Field in recent years. A few of the major ones have been discussed in this chapter to illustrate this point. Some have a relatively small impact in the beginning, but materially affect operations over a long period. Others reduce employment initially but in the long run may result in increased employment at Hill Field.

The Decentralization Program was a shift of workload from a higher headquarters that not only increased employment, but changed the whole concept of its operation. It placed the depot in the management business where heretofore it had been limited to operational aspects alone. It gave the depot a greater control over its future, as well as its current workload.

The assumption of Alaskan Air Command support was a transfer of workload from another depot to Hill Field. The initial increase in employment was nominal, but the long-range effects, which could not be explored in the limitations of this study, could be very important.

The transfer of B-26 responsibility was a loss to Hill Field and a gain to another depot. Although the actual personnel implications

could not be traced as of the time of the transfer, it can be assumed that the long-term effects could mean a loss to Hill Field. In any event it placed control of certain shop workload at Hill Field in the hands of another depot which could affect the future workload. If a similar transfer should be made in the case of the F-89, and if it can be done with one airplane it could well happen with another, it would seriously affect the Ogden Area.

The activation of the optical repair facilities was accomplished with manpower spaces obtained through internal savings in the depot. Other than that it is of interest because of the unique skills that can be retained in the community where authority can be obtained by the depot to utilize them for necessary work.

The Federal Cataloging Program is illustrative of factors that generate in sources far afield from the Air Force. In its implementation it has had little or no effect on depot employment. Because of the nature of the Air Force supply system its long-term implications to Hill Field and the Ogden Area are extremely important.

The Monetary Inventory Accounting procedure has been presented as an example of a procedural change in depot operations. Its implementation added materially to the white-collar work force: a minimum of at least 54 accountants and clerks. The long-term effect is difficult to forecast.

It would be advantageous in this study if the number of personnel involved could be related directly to each factor that has been discussed. Some indication can be obtained from Table 1, following, but on the whole this materially understates the effect on employment. The manning records at Hill Field are not maintained in such form as to permit a reconstruction of the manpower requirements for specific functions within an

organization.

Functions must often be assumed and performed long before additional manpower spaces can be allocated. This results in internal shifts of personnel to meet the requirements, and such transfers are not recorded in total for the specific functions. Such records as are prepared are seldom retained after the manning problem has been satisfied. Frequent and continual transfers of employees between functions are made to meet the shifting workloads. Generally the effects of major factors are phased over long periods of time and employees, and the manpower authorizations for their employment, must be obtained from any available source as the work progresses.

Table 1. A summary of additional manpower authorizations granted the Ogden Air Materiel Area for new functions from June 1952 to December 1954 by the Headquarters, Air Materiel Command

Functions To Be Manned	Number of Manpower Authorizations Granted	Date Authorization Granted
Decentralization of Supply Property Classes 28, 03, and 01 from Hq AMC	88	June 1952
Decentralization of AF Purchase Request-Military Interdepartmental PR Control Function	2	June 1952
Appropriations Accounting Functions related to Decentralized Central Procurement	1	July 1952
Decentralization of Supply Packaging Function	1	July 1952
Decentralization of Supply Requirements Analysis Function	2	July 1952
Statistical Service Functions in Support of Decentralized Supply Functions	3	July 1952
Decentralization of Supply Property Class 26 Functions	3	August 1952
Decentralization of Supply Requirements and Distribution Functions	4	September 1952
Decentralization of Maintenance Engineering Functions	31	September 1952
Decentralization of Supply Requirements and Distribution Functions	4	October 1952
Decentralization of Maintenance Engineering Functions	9	November 1952
Decentralization of Supply Provisioning Functions	1	November 1952
Decentralization of Supply Requirements and Distribution Functions	9	November 1952
Decentralization of Supply Requirements and Distribution Functions	25	December 1952

Functions To Be Manned	Number of Manpower Authorizations Granted	Date Authorization Granted
Establishment of USAF Property Disposal School at Hill Field	2	December 1952
Decentralization of Supply Requirements and Distribution Functions	1	February 1953
Decentralization of Procurement Status Report Functions to Support Decentralized Supply Functions	1	May 1953
Implementation of Monetary Inventory Accounting System	30	September 1953
Decentralization of Procurement Functions	43	October 1953
Decentralization of Procurement Functions	2	November 1953
Implementation of Mechanized Reporting System	5	November 1953
Activation of Assistant for Programming Function	10	December 1953
Implementation of Phase II of Monetary Inventory Accounting System	19	April 1954
Activation of Overseas Monitoring Office	9	April 1954
Implementation of AMC Work Measurement Program	4	April 1954
Implementation of General Ledger Accounting System	4	July 1954
Assumption of Logistic Support of Alaskan Air Command	14	July 1954
Decentralization of Maintenance Technical Order Function	5	September 1954
Implementation of General Ledger Accounting System	6	September 1954
Decentralization of Technical Order Function - Maintenance	5	October 1954
Decentralization of Technical Order Function - Supply	3	October 1954

Functions To Be Manned	Number of Manpower Authorizations Granted	Date Authorization Granted
Implementation of Monetary Inventory Accounting System	4	October 1954
Implementation of Electronic Data Processing Study	4	November 1954
Implementation of Monetary Inventory Accounting Transaction Analysis Function	1	December 1954
Total	355	

Source: Manpower and Organization Division, Comptroller, Headquarters, Ogden Air Materiel Area.

CHAPTER IV

HILL AIR FORCE BASE AND THE OGDEN AREA ECONOMY

The growth of a community is primarily dependent upon the economic advantages it enjoys over competitive communities. This is not meant to imply that temporary exceptions cannot exist. The early development of Utah following the Mormon migration to the State was one exception where a community was able to overcome its disadvantages. This was an example of a community that developed a broad industrial base and achieved relative self-sufficiency through its isolation, lack of external transportation, religious appeal, and the driving force of the leader, Brigham Young (24, p.479).

This challenge to basic economic force could not continue indefinitely. With improved transportation facilities the veil of economic isolation was lifted and competitive forces came into play. Now the economy of the area is bound to the more limited base of mining, steel, agriculture, and federal defense depots. Such exceptions as the early Mormon economy are only temporary phenomena.

Productive agents such as raw materials, fuel, power, an adequate labor force, land (with development possibilities), and the favorable location of the community with respect to related elements of the economy are representative of the natural advantages of the community. Having a competitive advantage in these, accelerated growth awaits the ability of the community to exploit their use. Not the least of the problems of exploitation is that of disposing of the products of industry. This is especially true in the intermountain area because of its sparse population. Parenthetically, it can be observed that the presence of such

unique industry as the large defense installations facilitate such disposal. This results not only from the resulting increased population, but also through the direct demand for products to support the depot operations.

Since an area is seldom blessed with a plethora of all the productive agents, its sound growth is relative to the degree to which it specializes in those activities providing the most favorable comparative advantage. Such specialization should seldom be developed to the nth degree. The greater the specialization the more the community becomes vulnerable to changing economic conditions, and the more it becomes subject to the competitive influences of outside communities, or, as in the case of the Ogden Area, with the predominance of government installations, the more it is affected by changing international relations or national policies. Government cannot foresee its future need for armament. It is limited, for example, in the extent to which it can afford to maintain storage aircraft that may become obsolete; and when need arises, it cannot delay. Because of the high percentage of total Ogden Area employed who work in defense installations the influences of world tension, or lack of tension, on area employment are of more than usual importance.

Once the desirability of emphasizing the favorable economic advantages is recognized the progressive community, insofar as possible, considers the type of industry that should be encouraged for the greatest economic advantage. For this purpose industry can be categorized into two classes. In one would be the basic, or population-growth industries. In the other group would fall the secondary, or population-sustaining industries.

Many fallaciously believe that basic industries are only those that are concerned directly with the production of physical goods. Where this premise is accepted, the conclusion is generally made that only physical-

production industries can fundamentally provide the base for an area's long-term growth. The corollary belief follows that only this type of industry should be encouraged by a community; or at least, that only this type warrants the active promotional efforts of the community. Representative of this thinking is the comment in a study of the Utah economy by the Industrial Commission of Utah, and others, in 1950 that:

> There has been a trend toward a greater percentage of jobs in the service industries, due in no small measure to the location in the state of government supply depots such as those near Ogden and Tooele. Despite this trend, the ability of a state or an area to support a given population is determined by the development of the physical producing industries. For this reason more emphasis is placed on such industries, in an effort to determine growth and development or even to measure business activity from month to month (13, p.3).

The author recognizes that it is not always possible to designate clearly an industry as being in one class or the other. Some government activities such as teaching, or the administration of government services, may be merely population-sustaining to a community. Others, such as the local government installations, are similar in their effect on a community to the steel or coal industries and are definitely population-growth in their effect on the Ogden Area. Similarly the portion of the railroad activity in the Ogden Area that services local requirements would be population-sustaining. The balance of the railroad efforts would be population-growth in nature. Indicating that the position of the defense depots as basic industries was recognized in Utah as early as the postwar years is the comment in 1946 of Mr. J. R. Mahoney, Director of the University of Utah Bureau of Economic and Business Research. In speaking of the defense depots, he said,

> To the extent that military activities continue, they will occupy a position similar to basic industries and will give a broader base to the postwar economy of the state (19, p.16).

The author of the Industrial Commission study of 1950 obviously did not

anticipate the garrison economy that exists today both nationally as well as in the Ogden Area. At this later date there is every indication that the garrison economy, irrespective of its merits or demerits, will remain for some time to come. Its effect on the national economy, witness Mr. Keynes and his theory of government expenditure, is similar to that of basic industry. Defense installations, as the local expression of the garrison economy, must also be accepted as basic industries.

It is submitted that manufacturing, agriculture, mining, governmental activities such as the installations mentioned above, and that portion of the railroad activity in the area not the result of local-service requirements, would fall in the category of basic, or population-growth industry. Trade, real estate, utilities, and service activities would generally be classified as secondary, or population-sustaining.

The population-growth, or basic industries, have a definite multiplier effect on the economy of a community. In part this multiplier effect is the employment in producing and delivering materials of all kinds for the work of the basic industry, and in the performance of all associated services. It is also the employment resulting from the expenditures of all those who receive their income from the outlays involved in the direct primary employment in the basic industry and the indirect primary employment of supporting industry that produces and delivers materials and services to the basic industry. The increased expenditures from these incomes, which include rents, interest, and profits, as well as wages, generally increase production and employment.

The degree to which employment in a basic industry determines employment in the secondary, or population-sustaining industries is not subject to precise measurement. In considering a specific area there will be some geographical leakage to the degree that the new income is spent on

"imports" from other areas. Leakage occurs also if expenditures cause local price increases. Some estimates, however, have been made in the past. One such study of local origin, made by the Utah Manufacturers' Association is of interest. As published in a Salt Lake newspaper in 1952 this summarizes that organization's estimate as follows:

> A basic industry regularly employing 400 persons would eventually create 600 additional jobs, or a total of 1,000 (a ratio of 1.50). These 1,000 workers with their families, could establish a community of 3,000, in which there would be 750 homes, 30 retail establishments, sales and service for 600 automobiles, 32 school rooms, and 75 professional men and women. There would also be a post office, a bank, a library, motion picture theaters, churches, and various other facilities for trade, repair, amusement and culture. The basic industry payrolls would create local business volume to the extent of 3½ times the amount of these payrolls (24, p.4).

The difference between the estimated multiplier factor of 3½ (ratio of local business volume to basic industry payrolls) and the estimated factor of 1½ (total local employment generated by a basic industry to primary employment in the basic industry) represents certain "leakage" factors such as profits, loans, interest, etc.

In contrast to the factor of 1½ noted above, the Bureau of Economic and Business Research, University of Utah in its study of Utah Economic Patterns (1953) presents an estimated employment factor of 4 for the non-ferrous mining and milling industry. This is calculated upon one additional person employed in the state in the production of goods used by the mining industry and approximately 3 others employed in furnishing services to every person employed in the basic industry (mining).

The possible impact of this multiplier will be examined further as the economic data related to Hill Field is considered.

EMPLOYMENT AND THE COMMUNITY

Hill Field Civilian Employment

In one respect the Ogden Area is fortunate in the composition of its

industrial base. Its largest employer, Hill Field, is exempt from either seasonal influences or fluctuations in the level of business activity. This does not mean that employment at Hill Field has not varied in the past or that it will not vary in the future. In fact its history shows that employment has been subject to wide fluctuations.

Examining the history of the installation over 14 years, from 1941 through 1954, (see Table 1) it is observed that 1941 to 1942 was a period of activation and rapid build-up. By 1943 it was in full operation reaching an all-time high in its employment history in July of that year with a total of 15,780 employees on the rolls. In contrast, the low point in the 14 years was reached some three years later in September 1946 when employment had decreased some 85 per cent below that of July 1943, to 2,287.

For the next three years operations expanded until July 1949 when 4,703 persons were employed for an increase of some 105 per cent from the previous low. The trend then reversed again for the next year and employment fell off until it reached 3,656 in June 1950, a decrease of approximately 22 per cent.

It is difficult to project what might have happened to Hill Field at this point had not the United States become involved in the Korean conflict. With the pre-Korean low utilization factor the economy of continued operation could well be questioned. Participation in the support of an expanding Air Force, the Foreign Military Aid Program, and the air activities of the Korean conflict made the question an academic one. They all combined to expand operations at Hill Field and increase employment 234 per cent (above June 1950) to a total of 12,210 in August 1952. Approximately the same level was maintained for the balance of 1952. By 1953 the strain of the Korean support had been overcome and a

gradual decline took place until by February 1954 employment had decreased 17.8 per cent to 10,040 employees. During 1954 employment has remained relatively steady, but slightly above the February level.

It is obvious that civilian employment at Hill Field over the first 14 years of its existence has not been free of substantial fluctuations. This is especially true of the latter part of World War II and the early post-war years (See Table 1). Most notable, in a consideration of Hill Field employment, is the fact that reductions, and they are the important ones to the community, were not related to seasonal factors, nor to the general state of local or national economy.

Although the depot at Hill Field is an industrial-type of activity, being a government operation the employees are not unionized. This is a factor of importance to the Ogden Area as it eliminates any possibility of either a sudden, or an extended major work stoppage because of strikes. This is economic security that few communities with a 13,000- (average number of civilian and military employees in 1954) man industry enjoy.

Military Employment

The peak in military employment at Hill Air Force Base was reached in March 1943 with just short of 6,000 officers and enlisted men (See Table 2). By January 1944 it had dropped 63.5 per cent to 2,200, and for the next several years after this it continued at a level somewhat less than 3,000. The following four years, from 1946 to early 1950, the interval between World War II and the Korean engagement, it dropped even further to less than 500, and in some periods hardly more than a hundred men. In mid-1950 the same factors that affected civilian employment (Korea, expanding Air Force, etc.) had an impact on the military at Hill Field and there was a decided increase to over 2,000 which continued throughout the balance of the year. In the last four years since 1950

Table 2. Civilian and military personnel - Hill Air Force Base - 1941 through 1954

Month	1941			1942			1943		
	Civ	Military	Total	Civ	Military	Total	Civ	Military	Total
Jan	0	0	0	1639	255	1894	8038	5750	13788
Mar	-	-	-	-	-	-	13200	5965	19165
Jul	750	49	799	6288	1700	7988	15780	4500	20280
	1944			1945			1946		
Jan	10748	2200	12948	8863	3562	12425	2798	1755	4553
Feb	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	2610	574	3184
May	-	-	-	-	-	-	2987	541	3528
Jun	-	-	-	-	-	-	3011	493	3504
Jul	9939	2850	12789	8098	2745	10843	3033	792	3825
Aug	-	-	-	-	-	-	2781	802	3583
Sep	-	-	-	-	-	-	2287	327	2614
Oct	-	-	-	-	-	-	2511	741	3252
Nov	-	-	-	-	-	-	2293	613	2906
Dec	-	-	-	-	-	-	2318	510	2828
Average							2663	715	3378
	1947			1948			1949		
Jan	2584	487	3071	4224	365	4589	4461	237	4698
Feb	2577	439	3016	4293	319	4612	4457	244	4701
Mar	2333	149	2482	4373	310	4683	4612	250	4862
Apr	2422	145	2567	4370	292	4662	4650	250	4900
May	2572	155	2727	4418	285	4703	4640	253	4893
Jun	2802	194	2996	4394	278	4672	4678	258	4936
Jul	2919	206	3125	4423	273	4696	4703	256	4959
Aug	2996	267	3263	4402	261	4663	4701	315	5016
Sep	2904	285	3189	3983	220	4203	4407	326	4733
Oct	3466	305	3771	4470	234	4704	4069	347	4416
Nov	3621	314	3935	4506	232	4738	3676	359	4035
Dec	4000	320	4320	4954	226	5180	3625	365	3990
Average	2933	272	3205	4401	275	4676	4390	288	4678

Month	1950 Civ	1950 Military	1950 Total	1951 Civ	1951 Military	1951 Total	1952 Civ	1952 Military	1952 Total
Jan	3625	341	3966	6070	2720	8790	10240	3049	13289
Feb	3592	329	3921	6810	3156	9968	10520	2748	13268
Mar	3603	336	3939	7430	3016	10446	10490	2450	12940
Apr	3663	358	4021	7790	3202	10992	10500	2338	12838
May	3737	1994	5731	8390	2974	11364	10700	2334	13034
Jun	3656	2175	5831	9140	3185	12325	11640	2117	13757
Jul	4043	2180	6223	9190	3494	12684	12180	2578	14758
Aug	4695	2202	6897	9340	3502	12842	12210	2258	14468
Sep	5002	2243	7245	9250	3613	12863	12110	2301	14411
Oct	5203	2367	7570	9360	3986	13346	11780	2434	14214
Nov	5202	2530	7732	9810	3822	13632	12000	2694	14694
Dec	5554	2508	8062	10020	3363	13383	12160	2624	14784
Average	4298	1630	5928	8550	3336	11879	11378	2494	13871

Month	1953 Civ	1953 Military	1953 Total	1954 Civ	1954 Military	1954 Total
Jan	12080	2511	14591	10090	1954	12044
Feb	11890	2360	14250	10040	2268	12308
Mar	11600	1977	13577	10140	2410	12550
Apr	11370	1616	12986	10230	2589	12819
May	11130	1444	12574	10180	2735	12915
Jun	11210	1518	12728	10140	2971	13111
Jul	11080	1939	13019	10180	3001	13181
Aug	10850	2052	12902	10130	3142	13272
Sep	10540	1900	12440	10080	3229	13309
Oct	10280	1860	12140	10159	3239	13398
Nov	10210	1771	11981	10206	3345	13551
Dec	10210	1821	12031	10181	3343	13528
Average	11037	1897	12934	10176	2852	12999

Source: Hill Air Force Base Historical Records and Comptroller Office, Headquarters, Ogden Air Materiel Area, Hill Air Force Base.

Note: Information not available for months not listed in years 1941 through 1946.

there has always been a substantial military complement at Hill Air Force Base ranging in number from 1,444 to 3,986. A small number of the military personnel assigned to the base have been stationed for intervals at the Tooele Ordnance Depot, where they are trained in ammunition specialties.

Military Versus Civilian Employment as an Economic Factor

There is an apparent tendency in the Ogden community to discount the effect of military employment on local business. This is indicated by the lack of interest, either by community groups or individuals, in military personnel housing, recreation facilities, in their social integration into community life, or in affirmatively encouraging military personnel to patronize local business establishments. The predominance of civilian employees at Hill Field and the general feeling that few of the military live in the community undoubtedly encourages this thinking.

Housing records at Hill Air Force Base show that more than half the military personnel assigned to the installation provide their own housing. Thus, in December 1954 92 per cent of the officers and 36 per cent of the airmen were not provided housing by the government. If all military are grouped we find that 55 per cent of the total were providing their own housing.[1] Hill Field authorities indicate that these proportions have been fairly constant in the past if the war years are excluded. In computing the above percentages, military personnel occupancy of Wherry housing units (constructed on the eastern edge of the military reservation in 1953) was not considered as housing furnished by the government.

In December 1954, of the 350 units in the Wherry project 179 were occupied by airmen and their families, 140 by officers and their families

1. In numbers of individuals providing own housing there were considerably more airmen than officers. However, if considered separately by group there was a much lower percentage of airmen than percentage of officers self-housed.

and 24 by families of civilians employed at Hill Field, with 7 units vacant. For the 7 vacant units there were 2 airmen and 7 officer applications. If Wherry occupancy is considered as on-base similar to occupancy of government-furnished quarters, then the adjusted figure would be 42 per cent of the military force living off base as contrasted with the 55 per cent previously noted.

To determine which figure is more representative, the nature of the Wherry Housing Project should be considered. The project is operated as rental property by a private corporation in much the same manner as the normal corporation owning rental apartments, or any similar profit-making activity in the community. The principal considerations in the relationship of the corporation to the government are: the corporate use of government land for the housing site, government guarantee of investment and certain profits, priority in occupancy for government-sponsored tenants, and reversionary rights of the government to the property. As none of these affects the way in which the tenant spends his money, or the amount of his pay, the author can see no difference in the economic effect upon the community of persons living in this project and those living in other neighboring communities such as Sahara Village, Golden Acres, or Clearfield.

The figure of 55 per cent is, therefore, considered as more acceptable. In an economic sense the figure of 55 per cent living in the community does not fully portray the impact. It must be kept in mind that this does not represent the income distribution. Because of several factors not pertinent to this discussion, the military personnel living off base are predominantly those having higher incomes. No factual information about total incomes of each of the two classes is available. However, a general examination of predominant salary groupings in each

of the two groups indicates that the percentage of the total wage payments going to the military personnel living off the base is very substantially greater than their proportionate number (55 per cent of total assigned military personnel) would indicate.

Referring to the 45 per cent who are furnished housing by the government, their spending habits are generally different from those of the other group. Members of this group are, with the exception of 16 officers occupying family-type quarters, practically all bachelors. Because of the small number involved, the discussion and the comments are, therefore, not necessarily applicable to them. With that exception, therefore, the on-base housed personnel are provided food as well as lodging (even here there is a positive gain to the community through local purchase of foodstuffs served them, especially perishables). Very little of their income, therefore, is spent for either food or lodging. They purchase some civilian clothing, but spend much less for this item than the average individual. Because of their predominatly non-family status and little need to apply income to the above items, they spend more on the average for recreation, entertainment, hobby equipment and supplies, luxury items, and other items of a personal nature. There is a high percentage of automobile ownership, and initial registrations indicate substantial purchases of automobiles and accessories are made in the local area.

It can be said in summary of the on-base group that individually they do not spend , on the average, as much in the area as do other inhabitants. The total group expenditures are substantial, however, and of material importance to the local economy in the area immediately surrounding Hill Field. From his knowledge of income payments to these military personnel living on-base, and discussions with representative individuals of the group, the author estimates that their total current

annual personal expenditures in the Ogden Area are in excess of 1½ million dollars. This expenditure is of special importance to the area since the income of this group is not affected by local economic conditions. Cutbacks in local employment are first and most deeply reflected by reduced expenditures for the types of consumer goods and services for which these persons spend the major part of their income. Thus, in a recession period the presence of these employees in the community work force has a decidedly stabilizing effect on these industries bearing the greatest shock of reduced community expenditures.

Employee Residence

Where an employee lives in the community obviously determines where his buying power most strongly affects community business and population growth. Three studies of the residence of Hill Field civilians have been made. As they are all of recent origin (1951, 1952 and early 1954) they accurately indicate community distribution. They are deficient since they do not include military personnel. However, examination of military rosters indicates a greater proportion of military personnel than of civilian employees lives in the community immediately adjacent to the installation. In fact, it is doubted if any appreciable number of the military personnel live outside of the Ogden Area.

There is a definite increase in the last two years in the number and proportion of civilian employees residing in Davis and Weber counties, and in the area immediately surrounding the base (Table 3). The latest survey indicates that 48.6 per cent lives in Weber County and 30.5 per cent in Davis County. If Morgan County is included, a total of 80.1 per cent lives in the Ogden Area. If the arbitrary dividing line of the Utah State Employment Security is adopted and the portion of Davis County south of the north limits of Farmington, Utah, is excluded the revised

Table 3. Place of residence of Hill AFB civilian employees by county - 1951 - 1952 - 1954

County	1/ May 11, 1951	Percentage Distribution	2/ Mar 7, 1952	Percentage Distribution	3/ Feb 15, 1954	Percentage Distribution
Total Number Employees Approximately	8390		10490		10100	
Total Number Employees Surveyed	8193		10475		10077	
Box Elder	248	3.0	417	4.0	319	3.2
Cache	171	2.1	312	3.0	168	1.7
Carbon	1	0.0	2	0.0	0	0.0
Davis	2179	26.5	2930	28.0	3072	30.5
Morgan	91	1.1	114	1.1	102	1.0
Salt Lake	1504	18.5	1877	17.9	1488	14.7
Summit	4	0.0	11	0.1	13	0.1
Utah	0		0		14	0.2
Wasatch	0		0		3	0.0
Weber	3995	48.8	4812	45.9	4898	48.6

Source:

1/ Ogden Chamber of Commerce - Method of computation not available.

2/ Comptroller, Headquarters, OOAMA - Compiled from Federal W-2 Tax Forms.

3/ Comptroller, Headquarters, OOAMA - Compiled from employee answers to Survey Form.

Ogden Area figure becomes 74.2 per cent (a more detailed community residence breakout is presented in Table B of the Appendix).[1]

Employee Income

Important as a barometer of the economic health of a community is the dollar amount of the income, salaries, and wages received by its inhabitants. If a portion comes from outside the area, or from an industry such as Hill Field, which has the characteristics of a basic industry, its value to the local economy becomes manifold because of the multiplier effect. Of course, if that income comes disproportionately to a relative few in the community it may not be entirely advantageous in that there is likely to be a greater propensity to save and less propensity to spend. It is generally accepted (at least by followers of the Keynesion School) that the greater the propensity to spend the faster the wheels of commerce will turn. Salaries and wages are rather evenly spread throughout the work force at Hill Air Force Base and no individuals receive unusually high salaries. In fact, from a community standpoint it is a most advantageous distribution because it has none of the usually high- or low-paid individuals normally found in a private industry of similar size. Thus, there is a tendency for more of the income to flow into community trade channels.

In view of the importance of salary and wage payments it is pertinent to consider how they are determined at Hill Field.

Military pay scales are based upon set standard rates applied to each individual's grade or rank. Because of strict Congressional limitations on the number of officers and on the number of higher military ranks authorized, a very high percentage of the total military force are in the

1. The Utah State Employment Security accepts the place of employment as the determinant in reporting state employment. Residence, therefore, is not reflected in its data and Hill AFB employment is actually considered as a 100 per cent community factor in the Ogden Area.

lower grades, or ranks, with a resulting higher proportion in the lower pay-rate category than is true of civilian workers.

Civilian wage rates are more uniformly distributed as they are closely related to the job performed. For pay purposes, there are two groups of federal civilian employees. One group includes all the Classification Act, or graded employees. Employees in this group are paid on a per annum basis. The second group is composed of Wage Board, or ungraded employees. They are paid on an hourly basis.

The Classification Act employees are those in: professional, subprofessional, clerical, administrative, custodial, protective, fiscal and crafts. They are, in general, in the "white collar" type of jobs. Their salaries are established by an act of Congress and are standard nation-wide.

The Wage Board employees are all those that do not come within the Classification Act. In general, they are in what might be called the "blue collar" jobs, or work usually covered by union agreements in industry. Shop foremen and superintendents do, however, come in this group. The salaries in this group are established as a result of locality wage surveys by the Wage Board in Washington, D. C. Local people survey local private businesses and industry and determine the prevailing wage in the community for a sample of the specific jobs in the federal service in the area. This information is then forwarded to the Wage Board in Washington which, by standard method, determines the average prevailing wage in the community for specific jobs. With these as guidelines the hourly pay of all Wage Board employees in each grade is established.

As of the end of December 1954, 26 per cent of the civilian work force at Hill Field came under the Classification Act, with the balance of 74 per cent governed by Wage Board rates. In the Wage Board group

there were approximately 7,025 workmen and 425 foremen. In the past the percentage of Classification Act employees to total employees has been somewhat lower than 26 per cent, with a slight increase in the last two years as a result of the decentralization from higher headquarters of management-type functions.

Data as to the average salaries of employees in each group are not available and it is, therefore, not possible to judge the effect of variations in employment within a group. Average annual salaries computed for all employees for the last three years show an appreciable increase in each year. Beginning with an average annual salary of $3,306 in July 1951, it had risen to $3,606 in July 1952 (9.1 per cent increase). In July 1953 it was $3,988 (an increase of 10.6 per cent) and in October 1954, the last figure available, it was $4,213 (an increase of 5.6 per cent). The average salary should be representative of the income of the average individual employed at Hill Air Force Base since there are no employees receiving relatively large salaries. (Gross salary and wage payments will be considered in a subsequent section).

For comparative purposes the median annual salary as of October 1954 was computed and found to be $4,040. The arithmetical mean, or average salary is based upon actual wages received in the stated period and would therefore include overtime pay. The median salary was computed on the scheduled rate of pay for each individual and does not include overtime pay. Overtime in recent payroll periods has averaged about 2 per cent of the monthly payroll. The median salary, including 2 per cent for overtime, is $4121 for October 1954 compared to the arithmetical average salary of $4213, computed as of the same date. This confirms prior statements that salaries are in a relatively small range with no employees receiving extremely high or low salaries.

Hill Air Force Base and Ogden Area Employment Compared

To simplify comparisons this discussion will be based in general upon annual average employment figures for the last five years with census figures for 1940 for longer-term comparisons. These data are given in Table 4 following. In examining the data it is pertinent to note that there are employees listed in the total non-agricultural group that are not reflected in the detailed breakout. The total of these miscellaneous employees have been in the neighborhood of from 4,500 to 5,000 in recent years. These are employees of non-profit and religious organizations, state and local governments, and federal government (other than defense installations). Agricultural employment, which is not listed, was 3,100 at the end of 1954, and self-employed and domestic, also excluded, totalled 3,900 at that time (see Table 5).

Census figures indicate that there were no government employees in defense installations in the Ogden Area in 1940. Apparently this overlooked a small number, somewhere between one and two hundred, who were employed at the Ogden Arsenal. (As of January 1, 1940, Arsenal records show 180 civilians and 8 military on duty). Two of the other depots: U. S. Naval Supply Depot and Utah General Depot had not yet been started. Hill Field construction had begun, but the installation was not yet operative. Undoubtedly this construction had some effect on the Ogden Area.

But certainly during 1940 and previous years the business activity generated in the area by adjacent defense activities was very small. In contrast, by 1949, Hill Field alone had become a larger employer than the previous major industry in the area, the railroads, and employed, on the average, 13.5 per cent of all non-agricultural employees. At the same time, this represented about 37 per cent of all government installation

Table 4. Average number of employees in selected employment groups in the Ogden Area - 1949 to 1954 2/

Year	Non-Agric. Employees 3/	Industrial Trade and Service Employees 4/	Railroad Employees	Civilian Employees Defense Installations 5/	Civilian Employees Hill AFB	Military Hill AFB
1940	1/ 12848	8524	2600	0	6/ 0	0
1949	32592	13736	4120	11794	4390	288
1950	33333	14218	4260	11303	4298	1630
1951	41233	14838	4415	18138	8550	3336
1952	45150	15463	4300	20936	11378	2494
1953	43079	15802	4156	18863	11037	1897
1954	39596	14791	4010	15765	10176	2852

1/ Source of 1940 data: U. S. Census of Population 1940 - Data as of April 1940 and not averaged for the year. Comparability affected by unduplicated basis of counting, under-enumeration, and difference of classification.

2/ 1949 - 1954 computed from data, Table D Appendix.

3/ Includes, in addition to employees listed in other columns on chart, persons employed in private households, religious or non-profit organizations, or other activities not covered by unemployment insurance. Does not include military personnel.

4/ Includes all employment in area industries i.e., employed in contract construction, manufacturing, transportation, communication, utilities, wholesale and retail trade, finance, insurance, real estate, service and miscellaneous (except state and federal government and railroad employees).

5/ Includes Hill Air Force Base civilian employees but not military.

6/ Ogden Arsenal records indicate that there were approximately 100 to 200 employees at the Arsenal at this time.

employment. Or looking at still another facet of local employment of the time, employment at Hill Field was equal to approximately one-third of the total in all manufacturing, contract construction, communication, utilities, wholesale and retail trade, finance, insurance, real estate, and service activities in the Ogden Area.

By 1954 average employment at Hill Field was over 68 per cent as great as in all the cited activities (all manufacturing, contract construction, etc.), had doubled percentagewise to approximately 25.6 per cent of all non-agricultural employment, and was 64 per cent of all defense installation employment in the area. The latter (defense employment) represented 40.2 per cent of the total average non-agricultural employment in the area during 1954. Nowhere in the foregoing has military employment been considered. There was an average of 2,852 military at Hill Field (and almost negligible numbers at the other installations) during 1954, or the average total military personnel was equal to 71 per cent of the average railroad employment in the area during the same period.

Nor can it be overlooked that 1,000 of the average of 15,765 civilian workers employed in defense installations during 1954 were at the Ogden Arsenal. Late in 1954 it was announced that the Arsenal would be inactivated early in 1955 with a tentative target date of February 1, 1955. Thus, if the area is to maintain its current employment position some place must be found in the work force for an equivalent number of workers. There is every indication that the community is looking to Hill Field as the absorbing agency. If this occurs Hill Field will assume even greater importance to the Ogden Area. That this is recognized by the community is indicated by the President's Annual Report of the Ogden Chamber of Commerce for 1954 wherein it is stated,

> Hill Field has continued to employ in excess of 10,000 people which represents no decline in employment. This is doubly important to us as the Arsenal has continued to shrink until we now have a closing date of February 1st (1955) (22, p.2).

Heretofore average annual employment data were considered for comparative purposes. If employment data as of the end of 1954 (Table 5) are used, Hill Field provided employment for 22.7 per cent of the total employed persons in the Ogden Area. Comparing employment directly with specific industries, there were approximately as many civilian employees at Hill Field at the end of 1954 as there were employed in all the mining, construction, manufacturing, railroads, other transportation, utilities, and wholesale trade industries in the Ogden Area.

Gross Wage Payments

During 1953 there was an average of 15,802 persons (See Table D, Appendix) employed in all industrial, trade, and service activities in the Ogden Area. The Utah State Employment Security (Ogden office) advised the author that this group of employees received an estimated $48,460,307 in salaries and wages in the same period. Hill Air Force Base had an average of 11,037 civilian employees during the same period with gross salary and wage payments amounting to $42,791,168. Averaging less than 70 per cent as many employees in 1953 as the combined local activities referred to above, Hill Field paid out in wages and salaries 88.2 per cent as much as did the combined activities. If the 1,897 average military, with an annual payroll of $5,342,588 for 1953 is considered then, with total average employment of 12,934, and annual payroll of $48,133,756, the position of Hill Field would be 81.8 per cent as many employees and a payroll 99.3 per cent as large.

In 1954 salaries and wages for the same group of industrial, trade, and service activities were only available for the first three quarters

Table 5. Ogden area labor force - December 31, 1954

Total Labor Force	47,400
Unemployed	2,600
Employed	44,800
A. Self-employed and Domestic	3,900
B. Agriculture	3,100
C. Non-agriculture	37,800
1. Detailed by Industry	
Mining	20
Construction	1,190
Manufacturing	3,400
Railroads	3,860
Utilities, other transportation	1,060
Wholesale Trade	1,090
Retail Trade	5,200
Finance, insurance, real estate	750
Service, Miscellaneous	1,660
Non-profit, Religious	770
Regular Federal Government	1,020
Government Installations (Hill AFB - 10,181)	15,056
State and Local Government	890
Public Schools	1,840

Source: Ogden Employment Security Office, Utah State Employment Service

of the calendar year at the end of the year. Estimated total payments for 1954 have, therefore, been computed by projecting third-quarter payments into the fourth quarter. This may result in a slight overstatement of earnings because average employment was down 733 over the average for the third quarter, although holiday overtime payments in the trade group would compensate in part. On the above basis, gross salaries and wages for all the selected activities have been estimated at $46,056,711 for 1954. Average number of Ogden Area employees in this group in 1954 was 14,791, down from 15,802 for 1953. In the same period, Hill Field averaged 10,176 employees with wage and salary payments of $41,806,576.03. Thus, Hill Field had only 68.8 per cent as many employees, but paid out in wages and salaries slightly less than 91 per cent as much money. If the 2,852 military personnel (total employees 12,999) with annual salary payments of $5,992,201.91(total payments $47,798,77.94) are considered, the percentages increase to 87.9 per cent as many employees, and 103.8 per cent as much in payments.

Multiplier Effect of Basic Industry

Applying the multiplier for a basic industry suggested by the Utah Manufacturer's Association (referred to in the early portion of this chapter) to the three counties in the area, the following results are obtained:

1. Weber County. The February 1954 study of Hill Field civilian employee residence shows that 48.6 per cent of the civilian employees live in Weber County (Table 3). Applying this to employment at the end of 1954 (10,181) would indicate that 4,948 of the Hill Field civilian work force live in Weber County. If this generates a ratio of 1.50 additional jobs it will create 7,422 additional jobs, or a total of 12,370. These workers with their families would constitute 37,110 of the

population of Weber County (total population estimated to be 86,200 in 1952 by U. S. Department of Commerce).

2. Davis County. An estimated 30.5 per cent of the Hill Field employees live in Davis County, or a total of 3,105 of the current work force. On the basis of the aforementioned study this would generate 4,657 additional jobs, or a total of 7,762 jobs. This many workers with their families would constitute 23,286 of the population of Davis County (1952 estimated population 31,400). It should be noted that this is based upon the population of all of Davis County not just the northern portion usually considered, on the basis of the State Employment Service distinction, as being in the Ogden Area. This base is adopted because actual residence is considered in the instant discussion and not the place of employment.

3. Morgan County. About 1 per cent of the Hill Field work force lives in Morgan County, or a total of 102 persons as of the end of 1954. On the assumption that this generates 151 additional jobs there would be a total of 253 workers supported by Hill Field, or 759 persons of the population of Morgan County (1952 population estimated as 2,600).

If the foregoing results appear somewhat inflated, it should be noted that the effect of military personnel has not been applied in the calculations. Considering that 55 per cent of the military lives off-base, and with rare exception they all live either in Davis or Weber Counties, it can be computed that 1,839 of those assigned at the end of 1954 (3,343) live in those two counties. This added to the Hill Field civilians would give a total of 9,892 workers from Hill Field residing in Weber and Davis Counties. Applying the 9,892 against the 20,132 workers previously computed as being supported by Hill Field as a result of the multiplier effect, the factor is reduced from 1.50 to 1.03 which

would appear to be a conservative estimate of the impact factor.

CONSTRUCTION AS A FACTOR

Over the 14 years of its existence considerable money and labor have gone into the physical plant which constitutes Hill Field. These physical facilities are carried on the accounting records of the installation at cost price. As of December 31, 1954, $34,142,814.28 had been spent on labor, materials and land (See Table C, Appendix). Excluding a half million dollars as land cost, the entire balance over the years has benefited the economy of the Ogden Area. Thus, over $33.5 million have gone into labor and materials. The labor expended represents an addition to the normal labor force regularly employed at Hill Field. Such labor of the regular force as may be concerned with the physical facilities is only engaged in maintaining them. New construction is invariably performed by private contract, with the result that labor requirements are in addition to any previously discussed in this study.

In 1953 construction expenditures at Hill Field totalled $919,539, and in 1954 it amounted to $298,598. This compares with total value of building permits issued in Davis County of $1,195,378 in 1953, and $790,093 in 1954.

The construction data just referred to pertains to operating facilities at Hill Field. In addition to the above construction, 350 two- and three-bedroom apartments were constructed at Hill Field in 1953. These were built by private funds with government guarantees under the provisions of Public Law 211, 81st Congress (Title VIII, National Housing Act), generally termed the Wherry Housing Act. This project was completed August 1953 at a cost of $3,226,737, a rather substantial addition to the economy of the Ogden Area. It is interesting to note that despite the location on federal land, a local property tax is collected. This is based upon a

decision of the Attorney General of Utah that a county property tax can be levied on the leasehold interest (75-year lease to the private corporation constructing and operating the property) of the project. This tax is added proportionately to each occupant's rental payment.

For the next several years following 1954 new construction at Hill Field will be greatly expanded because of new construction authorizations by the 83rd Congress during 1954. This new authorization totalled $10,822,600. Included in this is $3,000,000 more for a new runway, $1,045,000 for new primary taxiways, $3,360,000 for a new warehouse, $151,900 for a new base fire station and many other additions to the physical facilities. All of these will require labor and materials over and above those required for normal operation of the installation. They will assist materially in reducing the 2,600 unemployed in the area at the end of 1954 (Table 5), and should support an appreciable number of additional workers in the area for the next two to three years.

Some measure of the impact on the local economy of construction work at Hill Field may be obtained from the results of a United States Bureau of Labor Statistics study completed in 1936. This covered a great number of Public Works Administration construction projects. The objective was to determine the relationship between indirect and direct labor in construction projects. Although it is a very exhaustive study, requiring some two years to complete, it covered only primary, indirect employment. The secondary effects, the stimulation of those industries and professions supplying consumer goods and services, resulting from the buying powers of workers employed directly on a project, were not determined. The Bureau of Labor study found that for the average PWA construction project, which would correspond to Hill Field construction, a total of two and one-half times more work was generated in private

industries supplying building materials than the workers in the building trades constructing the project (20, p.3).

The study also found, that while the ratio of 2.5 to 1 was the average for the normal PWA project, the indirect labor in some types of building is considerably more. The Bureau survey of power plant construction showed that in this type of project the ratio of indirect to direct employment was 4.4 to 1 (14).

When these specific multipliers are considered with respect to Hill Field and the Ogden Area, it must be kept in mind that they do not reflect the added stimulation of consumer goods and service purchases by primary, direct workers. On the other hand, these multipliers would be reduced to some degree by "leakage" outside the area. The extent of "leakage" would depend on the proportion of supplies and materials purchased outside the area. A project of the nature of the new runway and the taxiways which mainly require sand, gravel, and cement obtainable locally, should result in a multiplier close to 2.5 to 1. The extent of the additional multiplier resulting from the secondary stimulation of industries supplying consumer goods and services is not ascertainable. On short-term construction projects any stimulation may take the form of additional overtime and additional business for existing employees and employers. Long-term construction projects covering several years, such as that projected for Hill Field, could well produce new businesses and more secondary workers.

LOCAL PURCHASES

Millions of dollars worth of supplies and equipment are purchased every year by organizations at Hill Field. In 1953, such purchases totalled $20,544,356, and in 1954 $31,897,419. The major portion of this is spent outside Utah because of nonavailability of the items locally.

No segregation of purchases by locality is maintained at Hill Field, therefore, it is not possible to pinpoint the exact effect on the local community. It is estimated by Hill Field authorities that $5,250,000 are spent in the Salt Lake-Ogden Area annually, with about 10 per cent of this going to the Ogden community.

A review was made of a portion of the purchases represented by petty cash expenditures in the fiscal year 1954 (a small portion of the total) with the following results. Of $116,932.56 in cash purchases made during 1954, it was found that 86.33 per cent was purchased in Salt Lake, 12.27 in Ogden, 0.8 per cent out-of-state, and the balance of 0.6 per cent of the purchases made in the local area such as Layton, Clearfield and other adjacent communities.

The data in this section pertains only to supplies and equipment purchased. The costs of gas, electricity, and telephone service will be presented in a later section.

MISCELLANEOUS FACTORS

Fringe Activities

In addition to the employment figures previously considered there are, at Hill Field, a number of relatively small supporting functions whose employment figures are seldom considered in discussions of its work force. Representative of these are such activities as the Post Office, Red Cross office, Post Exchange, Civilian Restaurant, Non-commissioned Officer's Club, and Officer's Club. The last four are the principal employers having an average of about 126 employees, or 36, 41, 15, and 34 respectively. Although this is a relatively small number, when compared to total workers at Hill Field, it is significant. The last three (Civilian Restaurant, Non-commissioned Officer's Club, and Officer's Club), for example, employ an average of 90 people or the equivalent of

all the sales people in communities like Clearfield or Layton (26, p.44), or about one-third the number employed in the entire cement industry in the state. The employment stability record of these fringe government activities has also been much better than the activities to which it is compared.

Physically Handicapped Employees

The value of an industry to a community is not entirely a matter of dollars and cents. Illustrative of one facet of Hill Field operations that could well be in that category, yet at the same time could not be overlooked as an economic factor, is its program for the employment of the physically-handicapped. This is an important program both in the subject matter, and in the number of personnel concerned. In September 1954, there were 1,544 physically handicapped persons at work at Hill Field. The nature of the handicaps varied widely, but in broad categories there were 107 which concerned upper extremities of the body, 167 lower extremities, 182 the trunk (hips, shoulders, back, etc.), 90 with defective vision, 125 with organic conditions, 24 respiratory, 116 with significant allergy conditions, and 668 with other recurrent, or chronic, conditions. Because of the unique nature of some of the duties, many of these workers have found that their physical problems are an asset rather than a handicap in performing their work. It is interesting that three out of the twelve employees who received "outstanding" performance ratings in 1953 were physically handicapped.

Thus, the opportunity for such a substantial number not only to find work in the community, but also find employment that is both useful and necessary, benefits the community far beyond the mere furnishing of employment for 1,544 persons. Due credit must be given to the initiative and support given the program by Hill Field officials. That this was

over and above normal efforts is apparent from the national citations awarded this installation.[1]

Public School Support

School districts obtain federal funds to help alleviate the burden placed upon them by the location of federal installations under the provisions of Public Law 874 (Maintenance and Operations), and Public Law 815 (Construction). This assistance is based upon school-age dependents of persons living and working on federal property and school-age dependents of persons working on, but living off federal property. This assistance is predicated, in part, upon the fact that government installations are not taxable for local-school purposes. This support is substantial. School districts in which Hill Field employees reside received $526,138 in the 1953-1954 school year under Public Law 874 to supplement school maintenance and operation costs. Since the passage of Public Law 815 and through September 30, 1954, Weber and Davis Counties and the City of Ogden School Districts have received federal grants totalling $4,956,149 for school construction (See Table 6).

Significant is the fact that this aid is not limited to the community in which the government activity is located. Thus, in the surrounding territory Davis, Box Elder, and Summit Counties, and the cities of Ogden and Logan received substantial sums, whereas if the government installations had been taxable industries, only Weber County would have benefited. On the basis of the proportionate work force, Hill Field would be responsible for about two-thirds of the assistance granted to all communities listed in Table 6 other than Tooele and San Juan Counties.

1. Department of U. S. Labor - Award of Merit in 1952. National Blind Veteran's Award of Employer of the year - 1953. President's Committee on Employment of the Physically Handicapped, Citation for Outstanding Service in 1954.

Table 6. Federal aid to Utah public schools

School Districts obtain federal funds to help alleviate the burden placed upon them by the location of federal installations, under the provisions of Public Law 874 (Maintenance and Operation) and Public Law 815 (Construction).

The following districts have obtained funds under Public Law 874 for the years shown:

School District	School Year			
	1950-1951	1951-1952	1952-1953	1953-1954
Tooele County	$96,792	$115,984	$113,531	$157,225
San Juan County	574	247	None	7,413
Weber County	43,253	108,901	102,494	108,315 (est.)
Ogden City	139,122	116,936	134,020	147,853
South Summit	8,165	2,087	None	None
Box Elder	23,709	39,261	31,854	37,457
Davis County	131,957	160,368	234,566	225,747
Logan City	None	3,698	3,510	6,766

Total funds received under Public Law 815 through September 30, 1954.

School District	Total
Tooele County	$771,063
San Juan County	6,528
Weber County	1,439,754
Ogden City	1,526,104
South Summit	None
Box Elder	None
Davis County	1,990,291
Logan City	None

Source: Office of Superintendent of Public Instruction, State of Utah.

Note: This assistance is based upon (1) school age dependents of persons living and working on federal property, (2) school age dependents of persons working on, but living off federal property.

School records are not maintained in such form as to relate grant aid to specific depots.

PUBLIC LAW 874 - An act to provide financial assistance for local educational agencies in areas affected by federal activities, and for other purposes. (Reference: U. S. Statistics at Large, 81st Congress, 2nd Session, 1950-1951, Volume 64, Part I, Page 1100).

PUBLIC LAW 815 - An act relating to the construction of school facilities in areas affected by federal activities, and for other purposes. (Reference: U. S. Statistics at Large, 81st Congress, 2nd Session, 1950-1951, Volume 64, Part I, Page 967).

Consumption of Selected Utilities

As the largest industry in the Ogden Area, and also in the entire State of Utah, it is to be expected that it would be a substantial user of gas, electricity, and telephone services of the area. It has consistently used in excess of 2 per cent of all the gas produced by the Mountain States Fuel Company, and its annual payments have risen from $159,432 in 1950 to $290,499 in 1953 (See Table 7).

Payments for electricity have been somewhat less, although very substantial, having increased from $129,150 to $218,394 in the same period. Forty per cent of industrial consumption of electricity in Weber County in the last three years has been consumed by the activities at Hill Air Force Base.

No comparison of relative telephone usage is available. However, annual billings in the same period have been upwards of $55,000 for toll service alone (Hill Field operates its own internal telephone system) and exclusive of special channel, or special equipment, obtained from the local telephone agencies.

Transportation

The tonnage of materiel shipped into and out of Hill Field is subject to considerable variation from year to year. This is also true of the relative use of the various means of transportation and the transportation costs. The author has, therefore, chosen for consideration only the transportation data for the two most recent calendar years (See Table 8).

In those two years the total tonnage was relatively close contrary to the normal wide variations from year to year. In 1953, total inbound and outbound tonnage was 149,540. In 1954, it was 154,021 tons, an increase of less than 5,000 tons.

Table 7. Consumption and cost of selected utilities

Year	Hill Field Kilowatt Hour Consumption	Cost	Percent of Industrial Consumption Weber County	Cubic Feet Gas In 1000	Cost	Percent All Utah Consumption Mt. Fuel Supply Company
1950	13,037,288	$129,150	23%	646,849	$159,432	2.1%
1951	19,999,616	179,213	41%	864,331	252,438	2.6%
1952	23,073,850	208,365	42%	873,813	303,522	2.4%
1953	22,451,921	218,394	38%	834,988	290,499	2.1%

Source: Consumption Electricity, Ogden District Office, Utah Power and Light Company. Consumption Natural Gas, Salt Lake Office, Mountain States Fuel Company.

Note: Data not on strict comparable basis as Natural Gas data only available for all customers and on statewide basis.

Comparative data not available for telephone service. Recent billings for telephone service only, not including special channels, or other special equipment, furnished Hill Air Force Base are about $56,500 annually. This does not include internal telephone system operation. This system is government owned and operated.

In 1953, total transportation charges, excluding petroleum, incoming parcel post, and shipments by contract air carrier and military aircraft, amounted to an estimated $7,651,627. In 1954, subject to the same exclusions, charges totalled $5,140,879.

Although total tonnage increased 4,500 tons from 1953 to 1954, transportation charges decreased $2.5 million. This resulted from a number of factors, some of the most important of which are: shipments averaged only 1,222 miles in 1954 against 1,600 miles in 1953; substantial tonnage increases were in petroleum shipments, and contract and military air shipments that are not reflected in the cost data; the relative amounts of different classes of property shipped affect costs because of wide differences in tariffs and class rates (90 different class rates are applied to Hill Field shipments); the mode of transportation used, whether rail, truck, etc., also affected costs.

It would be helpful if Hill Field shipments could be compared with total shipments generated in the Ogden Area. However, comparative data on an area basis are not available for any of the major modes of transportation such as: railroads, trucks, etc. Nevertheless, it is obvious that the movement of materiel in and out of Hill Field is a substantial contribution to the local economy. Any reduction in the general workload of the installation, or change in the type of transportation used, will affect the earnings of local carriers.

Table 8. Shipments to and from Hill Air Force Base 1953 - 1954

	Outbound Shipments			
	1953		1954	
	Tons	Estimated Trans. Costs	Tons	Estimated Trans. Cost
Rail Shipments	14,298	$ 738,653	21,301	$ 659,413
Railway Express	139	32,150	214	48,116
Truck	19,907	1,776,466	15,904	1,313,483
Commercial Air	37	12,145	64	16,528
Contract Air	1,462		2,780	
Military Air	4,793		5,324	
Parcel Post	149	25,500	128	43,937
Total Outbound	40,785	$2,584,914	45,715	$2,081,477
	Inbound Shipments			
Coal	10,035	20,973	230	481
Petroleum Products	23,244	-	45,159	-
Other	35,785	1,848,653	31,695	981,277
Rail Shipments	69,064	1,869,626	77,084	981,758
Railway Express	180	41,632	137	30,803
Truck	35,293	3,149,547	24,730	2,042,451
Commercial Air	18	5,908	17	4,390
Contract Air	1,353		2,123	
Military Air	2,847		4,215	
Parcel Post	-	-	-	-
Total Inbound	108,755	$5,066,713	108,306	$3,059,402
Annual Total	149,540	$7,651,627	154,021	$5,140,879

Source: Directorate of Supply and Services, Hq OOAMA, Hill AFB, Utah

Note: Petroleum products are centrally procured by Middletown AMA and transportation costs are not segregated for Hill Field. Weight and cost data for incoming parcel post shipments are not maintained. Costs of shipments by contract air carrier are not segregated.

CHAPTER V

AN EVALUATION

THE FUTURE OF HILL FIELD

It is not possible to project the future of Hill Field with assurance. A few of the major influences can be considered, but at best they illustrate the uncertainty of its future.

Technical developments in air power will bear an important part in determining the future of the depot. The logistical system must change in phase with the changing concepts that follow these developments. One such change could result from the use of atomic weapons. It is obvious that warfare in an air atomic age cannot result in extended stalemates characteristic of past wars. The destructive power of such weapons leads to the conclusion that wars of the future will be of short duration. Such a war will probably be decided in a few months, or even days. But one of the primary purposes of an air depot is to provide facilities for the maintenance and repair, on an expanded scale, of combat aircraft in time of war. If the author's premise, that any future war will be of short duration is correct, then depot facilities will not be required as insurance. Nor will the pattern of depot expansion that occurred in past emergencies repeat itself as the war will be over before additional facilities can be constructed, or before existing ones are required to support combat aircraft.

What are the long-range peacetime requirements for air depots: As the Air Force completes its current expansion and modernization programs, production in the large airframe plants will be cut back to a much lower level commensurate with replacement requirements. There will continue

to be some new advanced aircraft coming off the drawing boards and going into production. But it is illogical to expect that current high production schedules will be continued as the expansion of the Air Force and the conversion to jet aircraft is completed. As production schedules for new aircraft decrease, and excess capacities develop in the large airframe plants, there will be a demand for maintenance work to fill in the void. It is important that the production capabilities of airframe plants and their work forces be maintained intact. This combination of circumstances could result in a diversion of a substantial amount of such work from the depot.

The development and use of guided missiles could have a substantial impact on future maintenance workload at Hill Field. Much of the work currently generates from the use of aircraft for training purposes. The guided missile replaces the combat aircraft and eliminates the need for the pilot, and, therefore, the need and use of the platform upon which he is trained: the aircraft. The guided missile, being essentially a one-shot instrument, will not require the maintenance that is necessary for aircraft in constant use. Expanded use of guided missiles, especially ground-to-air and ground-to-ground could in the future reduce the need for combat aircraft. The first guided missile impact of this nature will be felt by those depots, such as the Ogden AMA, that are specialized in fighter-type aircraft.

The Air Force has found its mobility greatly circumscribed in recent years because of the limitation of a logistical system tied to surface transportation. To achieve maximum mobility it has rapidly expanded the air transportation of aircraft parts. This has a direct effect on the quantity of each item that must be stocked. As the airlift of parts increases, the quantities in the system decrease and less people and

facilities are required. As more attention is given to speed in the movement of parts the intermediate storage points in the pipeline, such as depots, will be reduced to a minimum.

The major savings of an air-logistics system arise out of better inventory control and reductions in losses related to obsolescence. These savings translated into less materiel, less stocking, preservation and handling of supplies, and in the end, to less items discarded because of obsolescence, will mean less people required to perform this work. There will also be other fringe improvements. For example, airlift requires little or none of the normal heavy packaging. The rough handling of surface transportation and the long storage periods will not occur under an air transport system. This eliminates the need for heavy packaging and results in a corresponding decrease in requirements for depot-packaging and materiel-handling personnel. Rapid transport encourages the development and use of mechanical conveyors in the depot to prevent "bottlenecks" in the system. Such innovations also affect employment.

The expansion of the airlift of supplies and materiel requires a corollary development of more rapid methods of processing the paper work incident to the movement of the property. To meet this, the Air Force logistical system is undergoing a transition from manual to electronic methods in performing the functions of record keeping, arranging data, processing requisitions, processing data, and presenting logistical information. This will mean that many clerical functions will be performed in the future by such electronic machines as the Bismac, Univac, and the Elecom 125. This will have some effect on depot personnel, the extent of which cannot be forecast at this early stage. Because of the large capacities of the electronic-processing equipment it is entirely possible that they could be established at a few central locations. If

Hill Field is not one of the centers it could materially change the course of future employment at the installation.

Other factors such as Monetary Inventory Accounting control, and the Federal Cataloging Program, have been discussed in prior portions of this thesis. The latter program is expected to have a far-reaching effect on the future of the base. It is too early to tell whether the catalog changes will expand or decrease the mission of Hill Field.

All of the factors do not point to a reduction in employment at Hill Field. There are several things that should help to maintain or expand employment. The proposed transfer of the Army's Ogden Arsenal facilities to the Air Force will practically double the available warehouse space and ground area of Hill Field. This, together with a large warehouse approved for future construction, will make it one of the largest storage depots in the Air Force. This increased storage capacity, when and if fully utilized, should increase the number of warehousemen, property clerks, supervisors, and buildings- and grounds-maintenance personnel. Additional administrative space gained from the Arsenal should result in the assignment of new organizations, or new management functions.

A new runway with related facilities such as taxiways, aprons, and modern navigational aids was approved by Congress in 1954. When this is completed in the next several years, Hill Field will have one of the most modern airfields in the Air Force. This should insure that a large tactical organization and substantial numbers of military will continue to be assigned to the base.

SUMMARY

On December 31, 1954 Hill Air Force Base had assets of over $717 million, not including the value of numerous aircraft. The buildings and land cost over $34 million. The actual cost of reproduction at

current price levels would be considerably higher (estimated as of July 1954 at $54,210,000) (see Table C, Appendix). At cost price this represents the equivalent of about 17 per cent of the total current real estate valuation ($200 million) of all of Weber County Utah including the City of Ogden (35, p.2). Civilian employment of 10,181 represented 27 per cent of the total employed non-agricultural persons (37,800) in the Ogden Area labor force in December 1954 (Table 5). The inclusion of 3,343 military personnel would increase this to about 33 per cent. Or, if the total Ogden Area labor force (47,400 + 3,843 military or, 50,743), including unemployed, is considered, Hill Field's total employed personnel (10,181 civilians + 3,343 military or, 13,524) represents 26.6 per cent of the total. The annual payroll in 1954 was $47.8 million compared with $46.1 million paid to the industrial, trade, and service workers in the area.

This dependence upon one industry demands mutual understanding and close cooperation between responsible citizens of the Ogden Area and Air Force authorities. It is not the purpose of this thesis to prescribe a plan to accomplish this objective. Rather, the scope of the thesis has been limited to a study of certain economic relationships between Hill Air Force Base and the surrounding communities. Should this study indicate a need for greater efforts on the part of area civilians and military managers to understand the economic implications of their actions the purpose has been accomplished. If it also provides a basis for planning a more systematic approach to the problems so much better.

The concluding section of this thesis presents some examples of past approaches by the community and by military authorities to the problem of mutual understanding. The adequacy or inadequacy of the past actions by either party must be left to the reader. Because of the author's intense interest in the subject it has not been possible to

refrain entirely from some general observations.

Hill Air Force Base has maintained a limited liaison with the community throughout most of its existence. This has generally been effected through the media of the Ogden Chamber of Commerce, by newspaper releases, and through periodic public "open house" presentations. For groups such as the Chamber of Commerce and, on special occasions, certain public groups, information about Hill Air Force Base has been presented through conducted tours and briefings. This type of indoctrination serves a worthwhile purpose. Those persons responsible for community planning and management in the Ogden Area should, of course, have at least a basic understanding of the nature of Hill Air Force Base operations. Whether the information provided has been adequate must rest with the recipients of the briefings. As a minimum, responsible citizens should be aware of the projected use of Hill Field, its long-range facility needs, and the factors that may affect future employment. But this presents only one side of the picture. A forum should also be provided for the presentation of community planning and problems related to, or affecting the installation. This type of joint effort requires a great deal of objectiveness. Community representatives must recognize the necessity for accepting technological and management improvements in the military operations even though they result in some reduction in employment. They must also recognize and accept changes resulting from strategical requirements. The Air Force, on the other hand, should understand the community problems.

The continuation of large military installations in peacetime has encouraged a greater interest on the part of local communities in such federal activities. In many instances this has taken the direction of exerting political pressures through Congressional representatives.

Indicative of this change in thinking is the comment in a recent study by the University of Utah for the Ogden Chamber of Commerce:

> Only one major revision has been made in this supplement ---- the section which discusses the defense installations. The previous report indicated that the general economy of the Ogden Area was largely at the mercy of military planners at higher headquarters. As stated in the previous report, ".... business, labor, and the community effectuate decisions or control changes at the military installations." Contrary to that view, this revision suggests that aggressive action can and should be taken by business and the community to effectuate stability of defense employment so vital to the economy of the Ogden Area, and, incidently important to the state as a whole. The use of political influence is the action suggested (10, p.1).

The community cannot afford to overlook any reasonable approach in dealing with problems arising from local defense installations, but whether political action is a satisfactory answer is open to question. The use of political pressures requires an extensive knowledge of the operations of the military installation, and the application of considerable objectivity in approach. It makes even more necessary the mutual understanding previously discussed. Variations in the depot work force will arise with changing strategical concepts or the re-deployment of Air Force organizations. The need for such changes must be recognized and understood in the community. Some reduction in local work must also be accepted when national defense warrants an overall reduction. The best interests of all parties require that any substantial changes be made known before they occur, not when they have already become a fait accompli.

Community representatives should be assured that installation facilities are maintained in an up-to-date condition and that new facilities required to support a modern Air Force are planned, approved, and constructed. Thus, military housing and recreation facilities and adequate flying facilities may be just as important as warehouses and shops for the maximum use of the installation.

The community can do much on its own part to encourage the continuance

and possible expansion of activity at Hill Field. The provision of healthful and adequate recreation facilities in the surrounding community is one of the prime criterion in locating military units, because of their importance to morale. Adequate housing for both military and civilian personnel is often as important as on-base facilities. It is to the community's interest to carry out an affirmative program to encourage adequate housing at reasonable prices.

Much can be done, at least in the initial stages, by civic organizations, to integrate both civilian and military employees into community affairs. Any community action that will encourage employees to remain at Hill Field increases the efficiency of the installation, and increases the likelihood of additional work being assigned to it. There are many agencies: civic, fraternal, and religious, as well as political, in the community that could accomplish a great deal in this direction.

Several organized attempts to attain rapport between the community and Hill Field have been initiated in the past. A few that developed from military sources are mentioned as examples. There may be others generated by the community that have not come to the author's attention.

In 1942, an Ogden Area Council of Post and Station Commanders was organized. The Commanders of the Ogden Air Materiel Area and Hill Air Force Base are active members of this council. It was originated to help in the solution of mutual problems such as housing, transportation, labor, etc. It has continued in existence ever since, and has provided a vehicle for unified support of community projects, as well as the solution of local military problems (41, p.10).

In the winter of 1948-49 when snow and severe winter conditions forced deer to leave the mountains and come into the valleys seeking food, Hill Air Force Base started "Operation Vittle" for the starving animals.

Employees of the base also donated money with which to buy the hay which was subsequently dropped by military aircraft. It was about the same time that the base participated with the State of Utah in "Operation Hayride" to help farmers meet the severe winter conditions (4, p.19).

In May 1949, a series of weekly radio broadcasts was instituted in the community by Hill Air Force Base. These broadcasts contained news of the activities of the base and stories about its workers. The broadcasts usually featured an interview with an interesting Hill Field personality. The broadcasts have since been discontinued.

APPENDIX

Exhibit A. Wilcox-Wilson Act

1343a. Selection, construction and alteration of stations and depots for the Air Force; number

The Secretary of the Air Force is authorized and directed to determine in all strategic areas of the United States, including those of Alaska and our overseas possessions and holdings, the location of such additional permanent Air Force stations and depots as he deems essential, in connection with the existing Air Force stations and depots and the enlargement of the same when necessary, for the effective peacetime training of the Air Force components of our overseas garrisons. In determining the locations of new stations and depots, consideration shall be given to the following regions for the respective purposes indicated: (1) The Atlantic Northeast - to provide for training in cold weather and in fog; (2) the Atlantic Southeast and Caribbean areas - to permit training in long-range operations, especially those incident to reinforcing the Panama Canal; (3) the Southeastern States - to provide a depot essential to the maintenance of the Air Force; (4) the Pacific Northwest - to establish and maintain air communication with Alaska; (5) Alaska - for training under conditions of extreme cold; (6) The Rocky Mountain area - to provide a depot essential to the maintenance of the Air Force, and to afford; in addition, opportunity for training in operations from fields in high altitudes; and (7) such intermediate stations as will provide for transcontinental movements incident to the concentration of the Air Force for maneuvers.

In the selection of sites for new permanent Air Force stations and depots and in the determination of the existing stations and depots to be enlarged and/or altered, the Secretary of the Air Force shall give consideration to the following requirements:

First. The stations shall be suitably located to form the nucleus of the setup for concentrations of Air Force units in war and to permit, in peace, training and effective planning, by responsible personnel in each strategic area, for the utilization and expansion, in war, of commercial, municipal, and private flying installations.

Second. In each strategic area deemed necessary, there shall be provided adequate storage facilities for munitions and other essentials to facilitate effective movements, concentrations, maintenance, and operations of the Air Force in peace and in war.

Third. The stations and depots shall be located with a view to affording the maximum warning against surprise attack by enemy aircraft upon our own aviation and its essential installations, consistent with maintaining in connection with existing or contemplated additional landing fields, the full power of the Air Force for such close and distant operations over land and sea as may be required in the defense of the continental United States and in the defense and the reinforcement of our overseas possessions and holdings.

Fourth. The number of stations and depots shall be limited to those essential to the foregoing purposes. (Aug 12, 1935, c. 511, para 1, 49 Stat. 610, amended July 26, 1947, c. 343, Title II, para 205(a), 61 Stat 501.)

Change of Name. "Secretary of War" was changed to "Secretary of the Air Force" on the authority of section 207(f) of Act July 26, 1947, as amended Aug 10, 1949. "General Headquarters Air Force" and "Air Corps" were changed to "Air Force" on the authority of section 208(a) of Act July 26, 1947, as amended Aug 10, 1949.

United States Air Force. The Army Air Force, the Air Corps, United States Army, and the General Headquarters Air Force (Air Force Combat Command), have been transferred to the United States Air Force established under the Department of the Air Force by section 602c of Title 5, Executive Department and Government Officers and Employees.

1343d. Appropriation

There is hereby authorized to be appropriated, out of any money in the Treasury of the United States not otherwise appropriated, such sums of money as may be necessary, to be expended under the direction of the Secretary of the Army for the purposes of sections 1343a to 1343c of this title, including the expenses incident to the necessary surveys, which appropriation shall continue available until expended: Provided, that the provisions of section 1339 of this title shall not apply to the construction of the aforesaid stations and depots. (Aug 12, 1935, c. 511, para 4, 49 Stat. 611, amended July 26, 1947, c. 343, Title II, para 205(a), 61 Stat 501.)

Change of Name. The Department of War was designated the Department of the Army and the title of the Secretary of War was changed to Secretary of the Army by section 205(a) of Act July 26, 1947, cited to text.

Transfer of Air Forces. Consolidation and transfer of Army Air Forces into United States Air Force, see note set out under section 1343a of this title.

SOURCE: United States Code Annotated, Title 10 - Army and Air Force, 1953 Cumulative Annual Pocket Part, Para 1343a and 1343d, West Publishing Company, St. Paul.

Table B. Residence of Hill AFB civilian employees by county and community

County and Community	May 11, 1951	March 7, 1952	February 15, 1954
Total Employees Surveyed	8193	10475	10077
Box Elder County	248	417	319
Brigham City	185	276	234
Tremonton	20	49	22
Fielding	10	19	5
Bear River City	9	21	4
Corinne	5	19	14
Garland	7	13	12
Willard	6	8	16
Snowville	2	4	0
Deweyville	2	4	2
Mantua	1	2	3
Portage	1	2	1
Plymouth	0	0	2
Honeyville	0	0	4
Cache County	171	312	168
Logan	115	240	89
Wellsville	18	26	28
Smithfield	8	6	10
Hyrum	7	6	16
Lewiston	6	9	1
Mendon	6	6	0
Richmond	5	6	4
Trenton	3	4	0
Paradise	1	2	5
Clarkston	1	2	2
Providence	1	5	7
River Heights	0	0	1
Millville	0	0	2
Newton	0	0	2
Hyde Park	0	0	1
Morgan County	91	144	102
Morgan	87	110	102
Devils Slide	2	4	0
Croyden	2	0	0
Utah County	0	0	14
Provo	0	0	4
American Fork	0	0	3
Lehi	0	0	1
Orem	0	0	3
Payson	0	0	2
Pleasant Grove	0	0	1

County and Community	May 11, 1951	March 7, 1952	February 15, 1954
Davis County	2179	2930	3072
Layton	810	936	938
Clearfield	667	841	949
Kaysville	226	298	304
Sahara Village	162	378	372
Bountiful	121	233	279
Farmington	120	145	125
Woods Cross	40	62	57
Centerville	31	26	48
Syracuse	2	3	0
Sunset	0	8	0
Salt Lake County	1504	1877	1488
Salt Lake City	1436	1711	1405
Murray	33	73	37
Sandy	10	26	12
Midvale	9	23	13
Draper	4	12	3
Riverton	1	12	6
Magna	0	7	3
Holladay	6	4	2
Granger	2	3	0
Kearns	2	3	3
West Jordan	1	3	4
Summit County	4	11	13
Kamas	0	3	0
Coalville	4	8	4
Echo	0	0	1
Henefer	0	0	7
Park City	0	0	1
Wasatch County	0	0	3
Heber	0	0	3
Carbon County	1	2	0
Dragerton	1	2	0
Weber County	3995	4812	4898
Ogden	3558	4232	4313
Roy	322	420	460
Huntsville	17	20	15
Plain City	4	7	15
Eden	4	7	7
Clinton	2	8	0
Riverdale	2	5	0
Liberty	2	3	3
Hiawatha	2	3	0
Slaterville	1	2	1
Fairmont	0	0	1
Hooper	80	102	95
Taylor	1	3	1
Uintah	0	0	2

Source: May 1951 Survey - Ogden Chamber of Commerce - Method of computation not available

March 1952 Survey - Comptroller, Headquarters, Ogden Air Materiel Area - Data compiled from Federal W-2 Tax Forms.

February 1954 Survey - Comptroller, Headquarters, Ogden Air Materiel Area - Data compiled from employee answers to survey questionnaire.

Table C. Statement of assets, liabilities, and equity, Ogden Air Materiel Area, Hill Air Force Base, 31 December 1954

ASSETS		
Accounts Receivable & Advances	$	$ 3,273,731.35
Inventories:		
Depot & Base Stocks	665,744,166.86	
Other	112,579.27	665,856,746.13
Equipment in Use		13,668,520.42
Fixed Communication & Electronic Facilities		483,217.23
Land, Improvements & Buildings:		
Land & Land Improvements	$ 533,946.91	
Pavements & Runways	5,455,892.20	
Buildings & Structures	23,999,770.66	
Utilities Plants & Systems	4,050,884.94	
Construction in Progress	102,319.57	34,142,814.28
Total Assets		$717,425,029.41
LIABILITIES AND EQUITY		
Liabilities:		
Accounts Payable	$ 2,915,928.75	
Accrued Liabilities	5,361,717.87	
Equities held for Non-Air Force Activities	5,933,942.05	$ 14,211,588.67
Equity:		
Net Investment 1 July 54	$652,193,558.52	
Less Changes to Net Investment since 1 July 54	3,329,375.96	
Less Adjustments for Assets & Liabilities not previously recorded	647,480.79	
Add Net Changes to Equity	54,996,738.97	$703,213,440.74
Total Liabilities & Equity		$717,425,029.41

Source: Accounting Division, Comptroller, Headquarters, OOAMA

Table D. Number employees in selected employment groups Ogden Area

Year & Month	Total 1/ Non-Agri. Employees	Total, 2/ Industrial, Trade & Service Employees	Total Railroad Employees	Total Civilians All Defense Installations	Hill Field Civilians	Hill Field Military
1949						
Jan	31700	12365	4080	12490	4461	237
Feb	30300	12122	3760	11620	4457	244
Mar	31300	12724	3770	12060	4612	250
Apr	32600	13152	3930	12300	4650	250
May	32900	13386	3950	12350	4640	253
Jun	32200	13469	3980	12310	4678	258
Jul	33400	14599	4180	12120	4703	256
Aug	33000	14263	4280	12060	4701	315
Sep	35700	16264	4370	11800	4407	326
Oct	33400	14740	4370	11050	4069	347
Nov	32400	13948	4370	10810	3676	359
Dec	32200	13796	4400	10560	3625	365
Average	32592	13736	4120	11794	4390	288
1950						
Jan	29800	12076	3970	10360	3625	341
Feb	29900	12152	3970	10220	3592	329
Mar	30300	12744	4080	9980	3603	336
Apr	30700	13040	4130	10000	3663	358
May	31300	13375	4180	10200	3737	1994
Jun	32000	13992	4280	10200	3656	2175
Jul	33700	15361	4380	10950	4043	2180
Aug	34500	15500	4430	11540	4695	2202
Sep	37400	16761	4470	12660	5002	2243
Oct	37000	15713	4470	12950	5203	2367
Nov	36200	14862	4330	13110	5202	2530
Dec	37200	15037	4430	13470	5554	2508
Average	33333	14218	4260	11303	4298	1630
1951						
Jan	36400	13480	4280	14830	6070	2720
Feb	37800	13435	4280	16220	6810	3156
Mar	38500	13720	4330	17180	7430	3016
Apr	39500	13814	4350	17720	7790	3202
May	40500	14052	4380	18250	8390	2974
Jun	41600	14442	4380	19030	9140	3185
Jul	42800	15472	4380	18960	9190	3494
Aug	43600	15861	4480	18900	9340	3502
Sep	44800	17590	4580	18680	9250	3613
Oct	43200	16272	4580	18790	9360	3986
Nov	42900	15124	4480	19360	9810	3822
Dec	43200	14799	4480	19730	10020	3363
Average	41233	14838	4415	18138	8550	3336

Year & Month	Total Non-Agri. Employees	Total, Industrial, Trade & Service Employees	Total Railroad Employees	Total Civilians All Defense Installations	Hill Field Civilian	Hill Field Military
1952						
Jan	41800	13366	4280	20040	10240	3049
Feb	41900	13423	3980	20400	10520	2748
Mar	41900	13525	4030	20300	10490	2450
Apr	42800	14256	4080	20350	10500	2338
May	43400	14553	4180	20600	10700	2334
Jun	45000	15312	4280	21580	11640	2117
Jul	46400	16075	4380	22050	12180	2578
Aug	46900	16589	4410	20010	12210	2258
Sep	48800	18452	4470	21680	12110	2301
Oct	47300	17269	4570	21210	11780	2434
Nov	46900	16702	4570	21440	12000	2694
Dec	46500	16030	4370	21570	12160	2624
Average	45150	15463	4300	20936	11378	2494
1953						
Jan	44000	14654	3970	21270	12080	2511
Feb	43900	14575	3970	20720	11890	2360
Mar	43570	14846	3970	20240	11600	1977
Apr	43470	15270	4020	19700	11370	1616
May	42400	15493	4070	18960	11130	1444
Jun	43500	15430	4270	18820	11210	1518
Jul	43600	16868	4370	18620	11080	1939
Aug	45500	16281	4370	18240	10850	2052
Sep	43600	18665	4370	17770	10540	1900
Oct	42000	17018	4370	17430	10280	1860
Nov	41610	15427	4250	17320	10210	1771
Dec	39800	15101	3870	17315	10210	1821
Average	43079	15802	4156	18867	11037	1897
1954						
Jan	39100	13435	3770	16940	10090	1954
Feb	39300	13226	3770	16620	10040	2268
Mar	39550	13516	3770	16440	10140	2410
Apr	40300	13878	3770	16470	10230	2589
May	39400	14266	3970	16170	10180	2735
Jun	39600	14777	4170	15410	10140	2971
Jul	39500	15500	4200	15350	10180	3001
Aug	41600	15500	4200	15270	10130	3142
Sep	40300	17100	4300	15150	10080	3229
Oct	39300	16300	4200	15153	10159	3239
Nov	39400	15200	4100	15119	10206	3345
Dec	37800	14400	3900	15094	10181	3343
Average	39596	14791	4010	15765	10176	2852

Source: Hill Field Employment, Comptroller, Hq OOAMA. All other employment, Letter, Department of Employment Security, Industrial Commission, State of Utah, Nov. 15, 1954 and personal contact with Ogden Employment Security Office.

1/ Includes employees in other columns except Hill Field military. Also includes employees of state and local governments, regular federal government, non-profit and religious organizations not listed in other columns.

2/ Covers in general all employees in mining, construction, manufacturing, trade, and service industries.

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