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THE AIR FORCE SUPPLY SYSTEM

13 December 1955

CONTENTS

	Page
INTRODUCTION--Brigadier General F. E. Calhoun, USAF, Deputy Commandant, ICAF	1
SPEAKER--Brigadier General R. J. O'Keefe, USAF, Director of Supply and Services, Office, Deputy Chief of Staff, Materiel, U. S. Air Force	1
GENERAL DISCUSSION	17

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GENERAL CALHOUN: Gentlemen: The subject for today's lecture is, "The Air Force Supply System." In a period of rapid technological advances, the problem of maintaining a supply system responsive to the demands of the user is a challenging one. It is further complicated by changing international commitments and pressures for reductions in military expenditures.

As the Director of Supply and Services, our speaker has top-level staff responsibility for supply management in the Air Force. He will discuss with us the experience, the problems, and the progress of the Air Force in developing and maintaining a supply system of maximum effectiveness at minimum cost.

It is a pleasure to welcome to the college and to present to the class, General R. J. O'Keefe.

GENERAL O'KEEFE: Thank you, General Calhoun. It is my pleasure to appear before this college to address these distinguished students.

It is my purpose to discuss the Air Force Supply System. As a prelude to discussion of the current status and future of our system, I think it appropriate that we first review briefly the history of military supply.

We find that the first supply managers of record were the Scribes of the Egyptian Army in the year 1600 B. C. Some of my contemporaries are of the opinion that supply has not changed very much since then. Many supply functions are fundamental and never change. Troops must be clothed, fed, housed, transported, cared for, buried, and provided the implements of war.

Over the centuries there have been few changes in logistics principles compared to improvements in weapons. The only major changes have been in the complexity of logistics to match greatly increased firepower and weapon destructiveness.

There have been a few innovations, such as the Quartermaster of the Army of Julius Caesar in the first century, B. C., and the outstanding logistical planning and supply organization of Gustavus Adolphus, King of Sweden, in the 17th century. This was the first time a military leader planned for and provided logistical support to his troops and did not exist by forage or plunder.

The position accorded logistics has varied from time to time and from country to country. A universal interest in supply management has developed only in recent years, and then periodically. Such interest has, understandably, occurred during and immediately following major wars. A strong interest on the part of the public and the Congress can be attributed, at least in part, to our shortcomings.

During the Spanish American War, troops were sent to Cuba clad in winter uniforms, and thousands of men died from eating poisoned corned beef which was contaminated in the canning process. These incidents, among others, eventually brought about the appointment of Elihu Root as Secretary of War to rectify--I quote--"the wastefulness of a decentralized system of purchase and supply."

Early in World War I supply was found to be the principal area of weakness. This was finally corrected in 1918 by the establishment of a purchasing and supply division of the Army General Staff, later known as G-4.

The last war was no exception. The theory of plenty and its aftermath is too familiar to need recounting. Public interest and criticism has not lagged after ten years. For the first time in our history we are faced with the problem of maintaining large and expensive military forces when we are not engaged in a war.

Modern air power, with multimillion-dollar weapons and high rates of obsolescence, is, without question, the most expensive. The anticipated short-duration war and the impact of preparedness cost on the national economy demand that the military develop and implement a supply system that will meet the needs of both the strategy and the national economy.

I intend to describe the Air Force Supply System, that recognizes the needs of strategy balanced against the national economy, by discussing the mission, policy, and operating procedures, material requirements and distribution, and our philosophy of management.

The supply mission of the Air Force can be expressed in a few words. We must provide the right supplies at the right place at the right time, without excesses. Our objective is to accomplish this with maximum effectiveness at minimum cost.

The Air Materiel Command, one of the 19 separate commands in the Air Force, operates the Air Force Supply System under our policy direction. We furnish policy by communicating to all major commands the legislation of the Congress and the policies and directives emanating from the Department of Defense, the Secretary's Office, and the Air Staff.

We do this through the development of policy and air-staff supply management for storage, disposal, distribution, cataloging, inventory control and accounting, and unit equipping involving the 1,335,000 separate items in the system. Eight hundred thousand of these items are procured, stored, and distributed by air depots. Four hundred thousand are provided by the Army, and we locally purchase 135,000.

The Air Materiel Command implements these policies through specific instructions and procedures, and manages the system within its responsibilities, through all levels of command.

Commands, other than the Air Materiel Command, have distinct responsibilities, whereby they must make known their needs and request levels of supply from depots in accordance with established directives. In addition, they have responsibility for inventory management of supplies stored at bases under their jurisdiction.

The Air Force Supply System involves two major elements: determining essential requirements, and distributing materiel to the user. In order to have supplies where and when we need them, the process of determining requirements must commence with current operating plans and mobilization war plans.

Operating Programs are the documents published by the Deputy Chief of Staff (Operations) for the orderly development of the air arm. These documents form the basis for computing materiel requirements, budget estimates, buying programs, and, upon receipt of materiel from production, distribution to the user. The materiel provides a combat readiness for the Air Force to wage war at any time with the forces in being.

Mobilization war plans are also published by the Deputy Chief of Staff (Operations) for the specific D-day employment of air units. They are

the basis for computing additional materiel requirements for positioning of reserve supplies to support the Air Force at war.

The translation of these programs and war plans by the Air Materiel Command into specified quantities, known as requirements computations, is an involved and detailed process. Such important factors as wear-out rate; assets on hand; special requirements; repair-cycle time; procurement lead time; consumption rate; past-flying-hour programs, and future programs are all considered in determining total item requirements.

While I mention computations briefly, the great number of items in the system makes it one of our most difficult tasks, and also one of the most important. The magnitude of the task is beyond people and the Air Materiel Command is turning more and more to electronic computers to do the job.

The foundation of the materiel distribution system is the air depot complex, which consists of 15 continental and 5 overseas air depots located in the Far East, Europe, and North Africa.

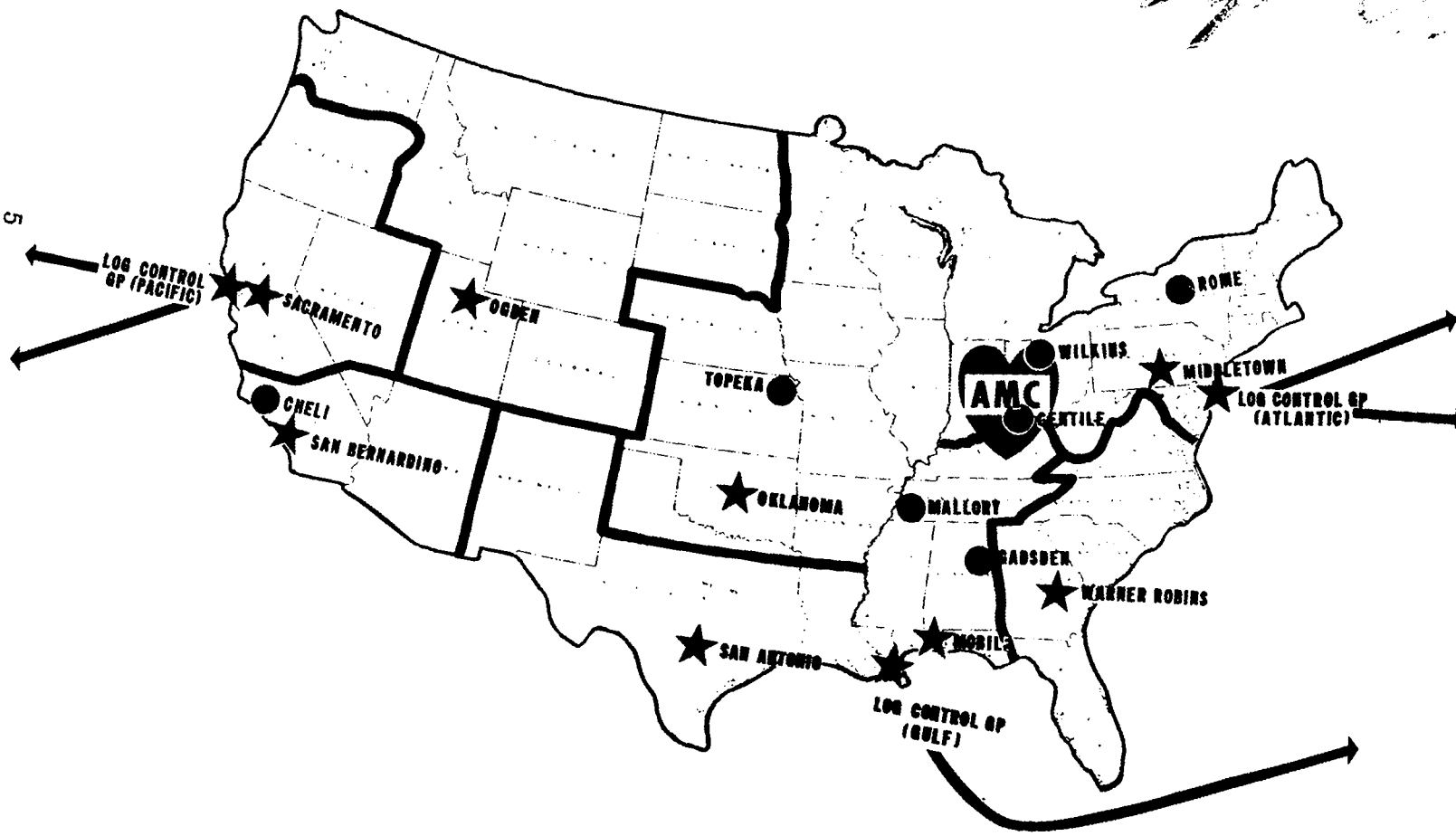
The overseas depots, heretofore under the jurisdiction of the theater commander, will be transferred to the Air Materiel Command by next January. For the first time the entire Air Force depot supply operation will be the responsibility of one agency, namely, the Air Materiel Command, with headquarters at Dayton, Ohio. This consolidates worldwide wholesale supply operations for more effective management.

In recent years we departed from the general depot concept, whereby a depot stocks all kinds of supplies for all units in an assigned geographical area. The general depot satisfies fixed army installations. However, it does not meet the needs of a highly mobile force committed to immediate employment on a global basis. The Air Force system must guarantee continuous supply support, regardless of the geographical location of operational units.

The magnitude and mounting cost of supply support dictate a system that provides centralized support responsibilities, inventory control, and economical distribution for specific air weapons wherever they might be. We satisfy these requirements with the bizonal system established in the continental United States.

Chart 1, page 5.--The two zones are separated by the Mississippi River and the eastern boundaries of Illinois and Wisconsin. The east

CHART 1


LOG CONTROL GP (PACIFIC)
SACRAMENTO
OGDEN
CHELI
SAN BERNARDINO
TOPEKA
OKLAHOMA
SAN ANTONIO
LOG CONTROL GP (GULF)
MOBILE
MALLORY
GADSDEN
WARNER ROBINS
WILKINS
GENTILE
AMC
ROME
MIDDLETOWN
LOG CONTROL GP (ATLANTIC)

zone is charged with supporting air bases east of the Mississippi, and in addition those in Europe, Northeast Air Command, North Africa, and the Caribbean area. The west zone supports those west of the Mississippi River, and Alaska, Hawaii, and the Far East.

Each zone has a complete stock of all property classes, equitably divided on the basis of their needs, taking into account airplane population, unit equipment, and unit strength.

Under the zonal system, an item in supply is stocked at only one eastern and only one western depot. For example, Oklahoma City is the prime depot for B-47 spare parts, with Warner Robins as the opposite zonal depot. Although both depots are responsible for zonal support within their respective zones, Oklahoma City is the supply-demand control point for B-47 parts.

Thus, each depot has a dual responsibility. It is the supply-demand control and distribution point, and therefore prime for some classes, and has only distribution or zonal responsibility for others.

These 15 depots, with 50 million square feet of covered warehouse space, are coequal in supply importance. They compute total Air Force materiel requirements, and they procure and control worldwide distribution for those items for which they have prime responsibility. In addition to depot repair, all 15 depots utilize contract maintenance to return reparables to the system.

The depots indicated by green stars are Air Materiel Air Commands, of which there are eight, with additional responsibilities other than supply. They are large industrial complexes and are capable of overhauling airplanes, engines, and other components. They also furnish technical assistance to all Air Force units in their areas on supply and maintenance problems.

The red stars represent three logistic control groups, which receive all overseas depot supply demands, distribute the demands to the appropriate zonal depots for supply action, and monitor all outgoing shipments to overseas depots.

The depot system is operated by 40,000 supply personnel who process each month 3-1/2 million line items, equivalent to 400,000 tons. It is pertinent that dollarwise 75 percent of the supplies we buy are recoverable by repair. These must cycle through the depot system. That

is the major difference between the Air Force and the commercial merchandizer.

The depots are the principal supply source of 631 Air Force installations, equally divided between the United States and overseas. In addition to 286 air bases, these installations include aircraft control and warning sites, ground control and reception sites, communications and control centers, headquarters isolated from air bases, and detachments of all kinds.

These installations obtain their supplies from six main sources: air depots, army depots, petroleum refineries, local purchase, base maintenance, and other air bases. Bases requisition 55 major and 195 subclasses of supplies, consisting of 800,000 items that are either obtained through or stored in air depots. This property includes airframe spare parts; engines and accessories; photographic equipment; armament and fire control systems; clothing and personal equipment; airborne communications; radar and navigational equipment; shop machinery and special tools; and many other kinds of property that are peculiar to Air Force operations.

The air bases requisition 400,000 common-use items from army depots. These items are procured and stored in army wholesale depots for our use and are purchased with Air Force funds. They include tactical vehicle parts; ammunition; common communications equipment; engineer construction; railroad and chemical equipment; subsistence; medical, and other supplies commonly used by both the Air Force and the Army.

The Armed Services Petroleum Purchasing Agency, a joint Department of Defense activity, procures all bulk petroleum products for all military services. These products are obtained from commercial suppliers who deliver them directly to the air base or an intermediate storage facility. An air depot manages our fuel and controls its distribution worldwide.

The Air Force has a dynamic local-purchase program that involves the procurement of 135,000 items of supply, ordinarily available from commercial vendors. Local purchase, as distinct from central procurement by air depots, has accounted for high-dollar savings, due to decreased paper work, warehouse requirements, transportation and handling costs, and inventory investment.

We are required to procure from General Services Administration warehouses 2,300 local-purchase items, such as common housekeeping property and office equipment.

Base maintenance is an important supply source. It is our policy to perform maintenance at the lowest possible echelon. Last year 863 million dollars worth of unserviceable materiel generated by Air Force bases was repaired in base shops or by local commercial activities and returned to base supply as serviceable stock. It eliminates shipment of these reparables to depot facilities and saves a great many dollars that would have been spent for packing, crating, transportation, and handling.

Finally, bases support each other. They swap supplies to meet emergency requirements, and balance the distribution of stocks.

Air Force headquarters establishes stockage objectives for both depots and bases. It is our principal control over stock levels and, to a great extent, prevents attempts to overstock or hoard inventory assets. The stockage objective is a fixed factor in days of supply which limits stock levels and considers economy in investment and replenishment. The stockage objective alone does not determine the specific quantity of items that must be stocked to support the operational mission. There are two other important factors: The variables of consumption rate and time required for resupply. Since supply-demand is dependent upon the geographic mission and facilities, the variable factors are best known by the operating base.

For example, the pipeline to a fighter wing based in North Africa would be considerably longer than for a wing located in the Northeast states. On the other hand, stock levels of a training unit would be higher than those of an operational unit, for student training results in greater wear and tear on airframes, engines, tires, and brakes.

The principles also apply to determination of air-depot stock levels. However, air depots use consolidated data for calculation of the consumption factor, and stockage objectives are higher to insure uninterrupted supply support.

This formula for computing stock levels provides for these factors and establishes essential and economical stock levels.

Prior to 1953, stockage and inventory policies were identical for all items, and they received the same management. The magnitude of the job, with limited personnel resources, required selective management.

An item and cost analysis revealed that, of the different items stocked at that time, 2-1/2 percent of them constituted 45 percent of the dollar investment; 22 percent accounted for 40 percent of the dollars; and the balance of 75 percent accounted for only 15 percent of the dollars. This indicated that a large portion of our inventory dollar was confined to a relatively small number of items--an area that we could exploit. Therefore, we divided our inventory into three categories to permit selective management based on unit cost.

The initial categorization did not meet our needs, because the range of items selected for the "Hi-Valu" category was too large. Nor did selection by unit value alone prove satisfactory. We found it desirable to closely control some lower unit-cost items with a large gross investment.

For example, the F-89 interceptor required frequent replacement of an engine insulation blanket, which cost 46 dollars. The T-33 trainer used a large quantity of tailpipe clamps, valued at 102 dollars. The consumption rate of these items was so high that the quantities amounted to several million dollars.

Conversely, we had some high unit-cost items with a relatively small total investment that did not justify close control. For example, the 5 thousand dollar wing assembly for the T-33 trainer and the 7 thousand dollar door assembly for the B-47 are used so infrequently that the total investment is relatively small.

Recognition of these facts led to criteria refinement.

This is the current pattern for categorization of Air Force stock-numbered items. All Air Force stock-numbered items that we store and distribute have been categorized. These 935,000 items are either centrally procured or locally purchased, and include stock fund supplies, such as petroleum products, personal and flying clothing, office supplies, airborne communications, bombing and photographic equipment, shop machinery and tools, aircraft spare parts and related support equipment, and commercial vehicle spare parts.

The 400,000 line items that we obtain from the Army have not been categorized because Army catalogs do not provide for the code. They will be categorized when we convert to Federal stock numbers and they are published in Air Force catalogs.

Category I, called "Hi-Valu," consists of 9,700 selected items such as jet engine compressors and turbine wheels, F-100 cockpit canopies, and B-47 bombing system computers.

We buy fewer quantities of these items for stock. We segregate them in warehouses for physical inventory every three months and we accelerate their movement through the supply system, using premium communication and transportation. This gives us the means of achieving our ultimate objective of minimum investment in "Hi-Valu" items.

Spare engines are treated as a distinct commodity because of high cost and the need for an optimum repair schedule and minimum pipeline. Stock levels at both bases and depots are the lowest of any commodity with the exception of aviation fuels. Stock position is based on war plan flying hours. We are initiating procedures to account for engine by serial number, and they are inventoried at least once a month.

Category II contains approximately 270,000 items, such as aircraft starters and generators and wheels and brakes. These items would appear to warrant stringent controls, but we cannot afford to manage this large volume in the same way that we do the "Hi-Valu" items, because the cost in administration and personnel is prohibitive. Nor can we afford the high cost of premium communication and transportation for routine resupply.

Therefore, Category II depot levels are 30 days higher than those of "Hi-Valu," but base levels are identical. These stocks are not segregated in warehouses, and are physically inventoried every six months.

Category III contains approximately 650,000 items, such as gaskets and hose connectors. These low-investment ratio items present an opportunity to reduce the resupply cost. The Rand Corporation analyzed worldwide Air Force consumption data for a period of one year, and it was interesting to note that over three-fourths of the items consumed were in this low-cost category.

By increasing our base stockage objectives and decreasing the frequency of resupply, it has been possible to reduce the administrative resupply cost of these items by 65 percent. There are commensurate savings in packing, handling, crating, and transportation, and we physical-inventory these items once a year.

These 935,000 items represent 83 percent of our total inventory investment.

The modern Air Force, with increased materiel complexity, has clearly demonstrated that detailed item management was unwieldy and in fact impossible. The scope of the management task dictated a common denominator which could be used as a tool of management. The common denominator dollars for inventory accounting has become an important part of the Air Force financial management system.

The first four phases, covering worldwide warehouse assets at all depots and bases, have been completed. The completion of the remaining eight phases will give us a system that will permit a balancing of dollar assets with the requirements of operating programs and war plans.

Monetary inventory produces dollar information that will assist managers to take timely action in many of the sensitive areas of supply operations. The manager can take corrective action before imminent shortages reach an out-of-stock stage. He can take action to cancel or reschedule deliveries when shortages are indicated. He can measure procurement effectiveness by balancing fund obligations and deliveries. He can control reparable stocks for repair and for return to the system and he can measure the progress of disposal programs.

The dollar reporting of inventories is in its infancy and, as in all new systems, it will take time and experience to reach our objectives.

The Air Force inventory is accounted for and managed by two methods, based upon the manner of financing. The major portion, 12.9 billion dollars, is financed by appropriated funds, and the lesser portion, 850 million dollars, is financed by the Air Force stock fund. I will discuss these portions separately.

Of the portion bought with annual appropriations, 85 percent is stored in depots and 86 percent is located in the United States. The location of the bulk of this inventory in depots and in the United States discloses a healthy condition. It centralizes inventory and distribution control in our most specialized facilities and with our most competent management; and, most important, it permits ready distribution to meet a global situation.

As would be expected, 7.8 billion, or 61 percent, consists of parts to support the basic airplane. A recent Air Materiel Command study revealed that, of each dollar spent for aircraft spares, 25 percent was for spare engines, 25 percent for engine spare parts, 25 percent for airframes, 10 percent for electronic and armament controls, and 15 percent in other Government furnished aeronautical equipment.

The Air Force stock fund is based upon a buyer-seller relationship, and is our closest approach to commercial practice. The precedent for the fund was established by the Navy in the last century, when ship captains were given voyage provision monies to finance the ship operations as they sailed around the world. These monies paid the crew, bought food, sail, cordage and other ship's supplies from port outfitters in the same manner as the merchant traders.

In 1949 Congress organized the Secretary of Defense to expand the stock funds to other military departments. Like the ship captains, Air Base Commanders are now apportioned funds to purchase supplies from the stock-fund inventory.

The fund has five subdivisions: clothing, commissary, aviation fuels, general supplies, and medical-dental. These divisions were initially capitalized by on-hand supplies and equipment expressed in dollars. Additional dollars were allocated to the fund for working capital. Fund managers buy stocks and with working capital in accordance with estimated future requirements, and sell the inventory to consumers. Therefore, consumer sales convert inventory into cash to use again for the purchase of new supplies. This cyclical process gives to the stock fund the self-supporting character of a commercial enterprise. Our sales for this fiscal year are anticipated at 1.2 billion dollars.

The fund is financially flexible, in that monies can be transferred among the divisions as required. The financial status is reviewed each year by the Congress, and funds may be added or withdrawn, depending upon working capital needs.

This portion of our inventory amounts to 850 million dollars. Clothing amounts to 236 million dollars; commissary is 48 million; fuels account for 206 million dollars; general supplies 256 million; and medical-dental 104 million dollars.

It is intended that stock funds provide incentive to commanders to live within their operating budgets.

Our planned use of the total inventories is divided into five segments: operating stocks, mobilization reserves, economic retention stocks, held for others, and excess.

The operating stocks support 26,000 Air Force aircraft for a peacetime mission, and provide for combat readiness. These stocks also

support 6 thousand Mutual Defense Assistance Program aircraft. The mobilization reserves, added to the operating stocks, will support the employment of available forces on a specified D-day in accordance with war plans. Economic retention stocks are not required for current operating programs nor mobilization plans, but are held as an additional reserve for foreseeable needs. For example, it is good business to retain C-47 and B-25 aircraft engines and spare parts that are in long supply. It costs less to store these than to retool and procure small quantities at some future date.

We are holding stocks of aircraft spares purchased with Army funds for the support of Army aircraft.

The rapid development of airpower and the highly specialized and technical nature of aircraft spare parts result in a high rate of obsolescence. In the past three years we have declared excess 1.3 billion dollars worth of property at acquisition cost. Sixty percent of this excess was technical supplies and equipment peculiar to aircraft. At the present time we have generated one billion dollars in excess property which must be purged from the inventory to reduce costs connected with inspection, care, handling, and storage.

For the most part, the generation of high-dollar excesses reflects the transition of the modern Air Force from the propeller type to jets. By next July the Air Force will have activated 131 combat wings of the 137 wing programmed force, in addition to 141 supporting units. Eighty percent of these combat wings are to be equipped with jet aircraft. A continuous input of supplies and equipment is necessary for replenishment, buildup for a larger force, and for war reserves. For the past three years the Air Force has been provided on the average 3-1/2 billion dollars each year for the purpose of financing inventory input.

I would like to discuss stock turnover. In some cases individual turnover rates and similar criteria are useful in management of military supplies. However, the commercial practice of using turnover rates can be misleading, and we must use it with caution. Our mission is preparedness to meet a national emergency. The purpose of business is to stock merchandise that can be readily sold, and we do not have the commercial operator's latitude. Mobilization reserves and prepositioned stocks are held for a specific purpose and are not intended to turn over. Furthermore, a large portion of our stocks cycle from issue to use to repair and back to use. Therefore, pipeline and repair time, in addition to consumption rate, greatly influence turnover. These conditions,

foreign to commercial operators, limit our practical use of this management tool.

An overall turnover rate for a heterogeneous inventory is not particularly useful, and we do not plan to use it as a guide to management, but we will use the principle for specific commodities such as fuel, clothing, and any other where the rate means something. As a matter of information, fuels turned over 2.6 times last year. Commissary goods had a rate of 8. A sampling of 30 air bases shows that local-purchase stocks turn over about 3 times each year.

I would like to go back five years, when the supply system supported 48 combat wings, mostly propeller power, with a supply structure that was inadequate and outdated. The bizonal depot system, although conceived, was not fully implemented. Property accounting was not completely mechanized, and modern materials handling systems were not employed. Unwieldy item data was the major management tool, and nuts and bolts received the same emphasis as costly and important supply items. All items in the supply system were centrally procured by Headquarters, Air Materiel Command, and were managed to the best of their ability. The major supply responsibility of the air depots was distribution.

The supply system had to be redesigned to support increasingly complex weapon systems and higher rates of activity. A 220 thousand dollar World War II bomber required 6,500 new supply items. The 2 million dollar B-47 requires 20 thousand new items. We are adding new items to the inventory at the rate of 14 thousand each month, while we drop out 3,000 that are obsolete.

Indicative of the increased rate of activity, flying hours have increased 250 percent in the past 5 years, while total civilian and military strength doubled. This increasing complexity, activity, and cost, with continuing efforts to increase the ratio of combat to supporting personnel, demanded improved management, and a more responsive system.

The magnitude of the Air Force supply system dwarfs any business organization in the world. No business attempts to serve the constantly changing needs of so many customers with such a diversified range of products; nor does big business manage a multibillion-dollar operation with 11,000-dollar-a-year executives.

We can compare our supply system with a large industry in that each of us buys, stores, and ships material, and many of the operating

procedures and the methods used are identical. But, when we begin to analyze the objective of military operations, the reason we are in business, similarity ends. A concept has been expressed to the effect that logistic support can be divided into two separate and distinct categories; combat related, and therefore a military function; and supplies related, a civilian function.

Acceptance of that concept would recognize a practical separation of logistic support and tactical operations and the related strategy. No such distinction actually exists, and no clear line of demarcation can be established between them. The basic purpose of logistic support is to effectively create a weapon and bring it to bear on a target. Recognition of this fact dictates careful examination of any philosophy which would divorce from the military commander the logistic support of his operation.

Our management processes are directed toward maximum military effectiveness at minimum cost, but military effectiveness must be considered first. This subordination of cost is contrary to the training and thinking of the average business executive. We have no sales competition, and there is no second place--only the victor and the vanquished.

Business experience, however successful, does not guarantee an ability to direct military logistic operations, and we cannot, as some people assume, merely call upon a great reservoir of civilian talent to provide the management we require. Therefore, we must develop our own managers; and this means training professional military men in logistics management; and they must be supported with the best possible civilian talent we can find.

These civilian positions at air depots and higher echelons must be established in the highest civil-service grades, to attract the kind of talent we need.

The past five years have seen substantial progress in keeping pace with the expansion of the air arm from 48 combat wings to 125 wings, of which 39 are employed in overseas areas. We have fully implemented the bizonal air depot concept. The inventory has been categorized to emphasize better management of high-value items. Monetary accounting has been established as an effective management tool. Depots have mechanized property accounting by use of electrical accounting machines, and mechanization is being extended to base level. This gives us inventory data which is even more accurate and timely, and we are doing a bigger job with no more people.

Depots are using electronic computers for requirements computation, to capitalize on the inherent speed and accuracy of the machine. Modernization of materials-handling systems has expedited the flow of material at reduced handling costs.

The local-purchase program has reduced the depot inventory by 135,000 items at a greatly reduced overall cost. Increased airlift of high-value items has reduced supply pipelines, with a continuing reduction of initial inventory investment.

The 137 combat-wing Air Force will be achieved in 1957 and our supply system will see many changes by that time.

We have reached an understanding with the Army, Navy, and Marine Corps on interservice supply support for common-use items. The proposed agreement will provide for systematic exchange of supplies, and will reduce the total procurement, stockage, and back-hauling. It will prevent duplication of effort and provide maximum utilization of long supply assets before service in short supply procures from industry.

An intradepot transceiver network for rapid electrical transmission of supply demands is operating in the eastern zone, and western zone air depots, as well as in all three logistic-control groups. In the near future it will be expanded to overseas air depots, and later to base level. The transceiver network will expedite supply action through reduced pipelines with fewer human errors, thereby making the supply system more responsive at lower cost.

Probably the most important and far reaching innovation will be the use of electronic data-processing machines for stock control. These machines will give us a capability that has heretofore been unavailable. They can digest and reduce to significant totals great masses of data generated in Air Force logistics. They are unbelievably accurate and eliminate one of our prime concerns, human error. They can store unlimited information and produce answers with lightning speed.

Our supply system is based upon the user making known his needs to the supplier. Except for isolated instances of automatic issue and resupply, the user gets nothing until he asks for it. A centrally controlled, automatic issue-and-resupply system is beyond our manpower resources and existing machinery. Since our complex weapon systems tax our economy and productive capacity to the maximum, it is obvious that, if we try to furnish the combat forces all the supplies they request, neither the national economy nor the industrial capacity can support demands.

World War II was a war of plenty. We provided supplies and equipment in almost unlimited quantities, and much of it was not used. All of us can remember the many acres of supplies and equipment in every area of operation, where property was mislaid or forgotten, and therefore useless.

Future wars will be conducted on the basis of essential requirements, instead of the principle where the supply officer who speaks the loudest gets the most. Operating units in combat theaters will have neither the time nor the people to establish stock levels. It is mandatory that we develop a peacetime supply system that will operate effectively under conditions of general war, and provide only minimum essentials.

The electronic data-processing machine with a supply system designed to utilize its capabilities, will permit adequate control of forward-position stocks by computing operational unit requirements based upon actual needs. Intelligent distribution of limited assets will naturally follow.

This will be a fundamental change in logistics. It frees the combat forces of unnecessary supply administration and places the paper work load where it belongs--on the supplier.

There is no substitute for experience and judgment, nor are there precedents to guide us in solving many of our problems. We have borrowed from industry and applied many of the sound techniques practiced in the business world. Tremendous progress has been made in supply management in past years, and we believe that the next few years will show even greater improvement.

COLONEL SEEDS: Gentlemen, General O'Keefe is ready for your questions.

QUESTION: My question has to do with reconciling your mission of providing the right item with this monetary control. I can explain my perplexity possibly by citing the cycle of the Army mobilization reserve stocks just before Korea, which amounted, dollarwise, to exactly the amount of the requirement that was computed. One time you went to the budgeter and said, "We need some of this stuff," and he said, "You can have that much." It went on. Another time it went completely out of balance. They had howitzers coming out of their ears, and they were running out of money. If you go to this control with dollars, how are you going to avoid that?

GENERAL O'KEEFE: I agree with you. We won't fight the next war by throwing dollars out at people.

We do not run our supply system on dollars. We simply use it as a management tool, to find out where we stand. For us the dollar figures always come from items, and we multiply the items by the exact cost and by the replacement cost when we establish the requirement. We basically work with items. We don't work with dollars. The dollar is simply a management tool.

I don't know whether I made it very clear in my talk, but we tried managing our tremendous inventory on an item basis and we got lost; we could not keep track of it. We can keep track of dollars. Does that answer your question?

QUESTION: General, when the Air Force became a separate service, you did away with the technical service concept. Would you care to comment at this time on how you feel that has worked out, what effect it has had in the line of supply, and any other thing you might like to mention?

GENERAL O'KEEFE: Well, I thought I discussed that in the general depot system, where I said that the general depot system is based on the organization of the so-called technical service, where they have control of their commodities. We could not make it work--that is, the Army system--on a worldwide basis, where we had to support weapons. To us, a weapon is not an electronic designed something that fits into the ordnance area. To us a weapon is complete. You make a basic piece of machinery with all its supporting equipment, to include the destructive weapon that it will carry. We package it. We have to package it. In fact, we are going to have, I would say, a more clearly defined weapon system in the future because of that.

At one time we could supply just specific types of airplanes of all kinds, with the supplies that they needed; but today we can't even start the B-52 without special ground-support equipment. We can ground the B-52 today just as well with a starter that we don't have as with an engine that we don't have. We can never divide our weapons into the technical breakdown of the different components that make up those weapons.

I think this is the big difference between the Army and ourselves. It is a requirement for mobility on a global basis, and the support of that weapon wherever it may be. We can fly, today, the F-84 wing from Germany to the Far East in three days. We can't possibly support it

from multiplicity of supply points. We have to be flexible. We have to supply it as a weapon, from one source.

QUESTION: General, you mentioned that right now the user usually gets what he asks for. You went on to say that what you are proposing to do is work up a system whereby you relieve him of a lot of paper work, which I assume is that you relieve him of having to say what he needs.

GENERAL O'KEEFE: That is right.

STUDENT: I don't quite understand that, sir.

GENERAL O'KEEFE: Well, the only reason we are doing it on that basis today, where he must make known his needs, is that we don't have enough people to be able to get all this mass of data together and we don't have the capability of forecasting what he will need under any conditions. We must depend upon him to let us know what his new programs are, what the past consumption rate has been, depending upon his mission, his location, and his distance from the nearest supply point.

That will not work in the next war. We are sure of that. We have to have a central-demand control point, where all the data are kept for him. If there is a change in the program of an operating wing, where they have a different kind of mission, we can crank the data into an electronic data processing machine and automatically compute requirements for him, and supply him what he needs.

If we don't do that, we will do what we did in the last war, and what we did in Korea. I think the Fourth Wing in Korea was a very excellent example of it. We tried to operate that jet wing on the same basis on which we operated our fighting units in North Africa and up through Italy in the last war. I had command of the logistic area in North Africa at that time, and we had to set up one central demand point, because there just were not enough spares to go around to keep those units serviced. It did work. It gave us control, and a great deal of our issue was automatic. It was effective. Requests from units were usually on a plush concept: "Well, if we ask for 100, maybe they will give us 20." We just could not tolerate it.

The same thing happened in support of Korean operations. The Fourth Wing, with three stations, with the F-86 having the principal air battle at the time, had as much as 45 percent of its airplanes on

the ground for maintenance and spare parts. Seventeen percent of that was directly AOCP. General Everest decided he could not tolerate such a condition and, after quite a few people went into the theater to help him on the problem, he set up a single control point at one installation and sent out to the various units the spares required. He immediately dropped his out-of-commission rate down to three percent. When he did that, supply was controlled.

That is what we are heading for in the Air Force system. We want to do it back where we can afford to train people now who have the talent to operate, not exactly an automatic supply system, but one, at least, which we will be able to base on a broad knowledge of what they need for their weapons. I think we can do it a lot better than the people in the field can do it.

QUESTION: General, would you mind commenting on the Air Force supply element's views on the single-manager plan?

GENERAL O'KEEFE: I will be glad to talk about it. I think that all three services have basically the same thoughts, but we don't have agreement from the Department of Defense. I know Mr. Lanphier has talked to you about the single-manager concept and he has the viewpoints of the individual services.

I think it has a great deal of merit in some areas. We completely agree with him that it will fit in with subsistence, but I think the single-manager concept can be very dangerous in other areas.

As Mr. Lanphier, I assume, told you, he wants to carry this on to other areas--fuels, medical-dental, and clothing, and even some common spare parts for all services, Army aircraft, Navy aircraft, and our own. We are afraid of it, because we feel that the single-manager concept basically is unsound, even though we agreed to go along with it for subsistence.

War is the only reason we are in existence. We feel that, in time of war, if we have a collapse through a single-manager system furnishing our needs in subsistence, our troops will never starve to death. Food is one thing we have an abundance of in this country. We can always get it. If you take long lead-time items like fuel, where a program must be carefully worked out, it is a commodity that is not available in unlimited quantities in this country. If the required supply of fuel is not available when needed we could very easily lose a war in the first 60 days. We can't take a chance on it.

If you place responsibility on a single-service assignment, then it must be one service. I don't think the Chief of Staff of the Air Force would want the Chief of Naval Operations to run his fuel program, any more than the Chief of Naval Operations would want the Air Force to run his fuel program for him.

Our combat commanders want to have, and I think need to have, the say on a commodity that gives them the ability to wage a war.

Recommendations to the Congress have consistently stated that there is a difference between the use of a commodity in wartime and the supply of it. We don't believe that. We don't think there is any dividing line. You cannot separate logistic and tactical operations, and the related strategy.

QUESTION: General, would you comment on the possible expansion of the engine-airlift program to include other "Hi-Valu" items in the Air Force?

GENERAL O'KEEFE: The engine-airlift program is the result of extensive studies in reducing cost; however, the concept has application in other areas, such as aircraft out of commission for parts.

The concept was defended on the basis of extensive airlift. We do have extensive airlift today in engines. It is not all that we require. We don't have equipment to do what we need to do today. We are confined mainly to using that available airlift--both commercial contract airlift and MATS--for only essential engine requirements--the engines we purchased two years ago, on the basis that we would be able to airlift them.

The key point in the decision was that we could cut back our procurement program by 120 million dollars by utilizing airlift and thus reducing pipeline. It was the difference in pipeline between a 10-day round trip and a 28-day round trip, from airport to airport, across the ocean. It was on a concept of depot to user and back to the depot for repair, and then return to the system. The 18 days meant 100 million dollars in engines this past year.

I assume from our planning now that it will be 1960 before we can entertain further expansion of our airlift concept. The great majority of the 9,700 "Hi-Valu" items I spoke of are moving by air, but we would like to move a great deal more.

QUESTION: General, you mentioned in the definition of the functions of the various depots, specialized aircraft, such as the B-52. Now, in many of our airplanes, of course, we have a 50-caliber machine gun. For instance, that goes on several different models of aircraft. Also we have other types of items that go on many different types of aircraft. We have other classes of items--food, clothing, and whatnot--that go to all the different users.

How is that broken out? How are the depots arranged to take care of those things that go to several different items, that can't be specialized by type of aircraft?

GENERAL O'KEEFE: Well, the only things we procure for issue from our air depots are items that are peculiar to Air Force operations. Our air depots do not handle anything except equipment peculiar to the Air Force operation.

QUESTION: How about such items as are common to several different types of aircraft, then? Communications equipment might be one, gunnery equipment, and armament equipment.

GENERAL O'KEEFE: That is done on a prime-assignment basis. That is what we mean by the prime depot and the zonal depot. The prime depot has responsibility for a specific type of equipment. I spoke of spares for the B-52. Oklahoma has that. Warner Robins has the B-57.

Each item is assigned to a prime depot, such as Shelby, for clothing. Rome has all electronics. Memphis has everything connected with the automotive field. Other equipment is broken out. Sacramento has all ground-support equipment.

QUESTION: Sir, has any thought been given to cutting out or eliminating the depot as a step in the supply chain so that you can inspect at the point of production and ship to the consumer?

GENERAL O'KEEFE: Yes, a great deal of thought has been given to that, but there are a great many differences of opinion as to how effective it will be. We must always have a repair capacity in our depots. But for individual weapons, it is possible to obtain an individual weapon from the manufacturer, and also to buy the services of storage, modification, and issue, and then repair of the articles sent back to him.

We are doing that today on the Matador missile. We do not stock the Matador missile in any depot. It is handled directly by Martin at

Baltimore, and parts that are required come directly from the Martin plant. They store them. Many of the assemblies are stored in incomplete assemblies. They are not furnished until required.

Northrup is also doing it. They tried to get us to do it two years ago for the F-89. There is a great deal of objection to doing it. There's the feeling that we might lose control of the weapon. It is now being proposed by Northrup for the new Snark missile. They will go further with it than the arrangement we have on the Matador at Martin. We permit Martin to handle only the parts and the supplies that are peculiar to that missile. In other words, all common items will come from the appropriate Air Force depots.

Northrup would like to handle the Snark missile as a package, handle not only the common items, but handle the weapon also. We are trying to package the F-102, at an air depot, as part of the weapon system. I know Convair has expressed some interest in handling that for us. It would be greatly to our advantage to have the manufacturer deliver his equipment directly to the user, and repair it, if it does not cost us too much.

QUESTION: General, my question is based on the assumption that it is very difficult to get funds to set aside for items for mobilization. Now, I notice that we have had many speakers who brought out the fact that we need to make our supply lines very efficient, that we should cut them down, take away such items as the pipeline. I am a little afraid that if we get too efficient it may be very critical and we will have some losses. We are doing away with a lot of fat that sometimes we use to cushion our planning. Would you comment on that item?

GENERAL O'KEEFE: Our objective is to reduce our requirements to only those essential to carry on our peacetime mission and allow for ready expansion in war. This approach places us on firm ground with the Congress when we ask for money. Your assumption that we are trimming muscle, when we trim the pipeline, further assumes that during war we could expedite movement of supplies, reduce the pipeline segment, and use this stock for operations. I am not sure that I can agree with that assumption. We are constantly adapting distribution techniques responsive to combat operations. Our aim is a peacetime system instantaneously adaptable to war. Our pipelines are realistic and consistent with the current state of the Art.

COLONEL SEEDS: General O'Keefe, on behalf of the Industrial College, I would like to express to you our appreciation for the very fine contribution you have made to our educational program, and the excellent presentation you made on the Air Force supply system.

GENERAL O'KEEFE: I am very happy to be here.

(8 Mar 1956--250)O/ibc

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