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USAF LOGISTICS

1958-1959

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by

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FOREWORD

USAF Logistics, 1958-1959, is an account of Air Force efforts during these years to improve the quality of its logistic system to meet the rapidly changing military situation. Since time and space limitations did not permit a thorough discussion of all important aspects of the USAF logistic system, this study concentrates on certain issues that reflect changes in basic policy. These include logistic planning to provide the optimum in war readiness, the relationship between the Air Force and American industry, and certain significant efforts to streamline the supply, maintenance, and transportation capabilities of the Air Force. This study does not consider the development of ballistic missile logistic support, which will be covered in a forthcoming study prepared by this office.

Prepared as a chapter for inclusion in the History of Headquarters USAF, Fiscal Year 1959, this study is being issued separately to make it more readily available throughout the Air Force. As with all studies issued by the USAF Historical Division Liaison Office, this one is presented with an invitation for suggestions from its readers.

This document is classified SECRET to conform with the classification assigned to sources of information used herein.

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I. READINESS BEFORE THE FACT

The Air Force, of necessity, subscribes to readiness before the fact rather than mobilization after the fact. As one Air Force officer put it: "We will have what we need here when we need it, or we'll meet and talk it over in the hereafter."¹

During the 1950's, overall logistic planning began to undergo a vast readjustment. The introduction of thermonuclear weapons, mated to fast aircraft and ballistic missiles, was rendering archaic the logistic system of the past. As recently as World War II and Korea, time was available after the outbreak of hostilities to set the wheels of American industry in motion for grinding out the weapons of war needed by the troops in the field. Prearranged production schedules, industries earmarked for the fabrication of military items, and stockpiled raw materials all played a part in the mobilization scheme. But in 1959, with the expectancy of thermonuclear attack as the first overt move of a general war—a war in which the decisive period might be over within a matter of hours or days rather than weeks or months—the value of such planning was subject to detailed scrutiny.

The Air Force led the three services in the drive for a new and more efficient system. The entire USAF strategic concept hinged on the principle that we must be prepared to fight a general war with the forces and weapons actually on hand. In the event that general war was preceded by a period of localized conflict, the Air Force planned to support its combat



forces from the general war reserve. This, it was agreed, could be accomplished with a minimal calculated risk, and any production prior to D-day could be used as replenishment for the items consumed and for improving the general war posture.²

Because of its vital concern that logistic planning be wholly realistic, the Air Force stated wartime requirements in accordance with basic planning data and assumptions contained in USAF and Joint Staff war plans. It developed aircraft and missile inventories from current programming documents based on the premise that no reliance could be placed on post-D-day production except for the limited number of weapons obtainable by production compression* techniques.³

The Army and, to some extent, the Navy held to a more traditional position. They emphasized the need for logistic support for a longer war—a war composed of a series of localized actions rather than one all-out decisive battle. The Army did not recognize force losses, whereas the Air Force applied attrition factors to the post-D-day period. In the event of localized conflicts prior to general war the Army planned for the immediate replacement of losses with a buildup to D-day and a constant level thereafter. In complete contrast with the Air Force, the Army plans called for a higher level of equipping in wartime than in peacetime.⁴

Indecision at the top levels of Government as to the nature of a future war made it difficult to resolve the differences among the services. National Security Council (NSC) statements permitted widely varying interpretations of planning requirements for post-D-day mobilization and industrial

*For a discussion of the compression technique see below, pp 12-14.

readiness by the military services and the Department of Defense (DOD), which was responsible for coordinating logistic planning. The Air Force held that a single DOD policy could not cover all of the services. This position, based on the USAF strategic premise, was at the root of the controversy in 1958-59 between the Air Force and the Office of the Secretary of Defense (OSD) and resulted in certain contradictions between USAF and DOD directives.⁵

Mobilization Planning

Differences were most pronounced in the area of mobilization planning. The disparity between the guidance from OSD and the concepts inherent in the USAF war plans placed the Air Force in an untenable position when attempting to comply with DOD directives. The Air Force, for example, objected to OSD requests for lists of required items to be produced by U.S. industry during a short pre-D-day mobilization period or after absorbing a massive nuclear attack. The Air Force held that no significant production could be obtained during the limited pre-D-day period; little or no reliance could be placed on production after D-day; and in the absence of specific production-planning guidance for the post-D-day period, the current production and development programs provided a sufficient basis for any desired extended planning. Consequently, it requested relief from the mobilization requirement lists on the grounds of inconsistency with strategic thinking.⁶

In response to repeated requests for lists of such required items as petroleum, machine tools, aircraft, and aircraft engines, the Air Force

maintained its stand. In each instance it provided the current requirements and appended the following statement:⁷

In the absence of agreed bomb damage assessment data, particularly as this would apply to Post D-Day projection of force tabulation, neither Joint Plans nor Air Force Plans provide any basis at all for determining a list of military items required from production in the period D/6 to D/30. Since these plans stipulate that no reliance will be placed on production during the first several months following D-Day, the Air Force is unable to identify any specific requirements for the production of military items during the period D to D/6.

Assistant Secretary of Defense (Supply and Logistics) E. Perkins McGuire interpreted this response to mean that the Air Force desired the discontinuation of mobilization planning. This was not the case. To clarify the misunderstanding, in October 1958 the Assistant Secretary of the Air Force (Materiel) Dudley C. Sharp, summarized the Air Force position. He strongly affirmed the USAF belief in post-attack mobilization planning but suggested to the Secretary of Defense that such planning be based on valid post-attack studies that would determine the status of the mobilization base and evaluate the damage to forces. With such studies as a basis, the production requirements of those military forces remaining after a nuclear attack could be determined--weighed against the needs of the civilian population for survival--and allocated so as to marshal our greatest strength for the subsequent phases of a general war. To insure that guidance pertaining to the recovery period was consistent at the national level, Sharp believed direction should come from the National Security Council rather than the Department of Defense.⁸

The need for NSC direction had been voiced by the Director of the Office of Defense Mobilization in April 1958 when he pointed out that

"ODM's planning with respect to the industrial and civilian aspects of the mobilization base is closely dependent on military planning." Without proper coordination the civilian agency was handicapped in the performance of its responsibilities, and it was suggested to Robert Cutler, Special Assistant to the President for National Security Affairs, that the Department of Defense make a presentation on the subject to the NSC.⁹

On 18 December 1958 representatives of the Secretary of Defense briefed the NSC on mobilization and production planning. The disagreement between OSD and the Air Force came into clear focus at this time, for the point was raised that mobilization was a strategic matter and any change in concept would fall under the authority of the JCS and NSC. Thereupon, OSD sought to divorce the issue from military strategy by modifying the existing mobilization concept under the guise of providing^{guidance}/for the development of materiel requirements for fiscal years 1960 and 1961. The Air Staff objected to this action on the ground that any mobilization concept change would have to be submitted to the JCS and considered in the development of the appropriate Joint Strategic Operational Plan. Also, a similar recommendation would have to be forwarded to the NSC for incorporation in the Basic National Security Policy.¹⁰

Early in 1959 the Air Force presented this position--along with a recommendation for a new mobilization concept--to the Joint Staff, which was in essential agreement with the Air Force. The JCS approved the joint position and forwarded it to OSD on 18 March. The military elements of the Department of Defense won a "signal victory" in April when the Secretary of Defense notified the services that the proposed OSD guidance on materiel requirements for fiscal years 1960-61 was being withdrawn.¹¹

The USAF recommendation for a new mobilization concept also won the approval of the Joint Staff and, as of the end of June 1959, was being proposed for inclusion in the Basic National Security Policy. Adoption of the USAF concept was expected to (1) limit post-D-day force augmentation to feasible and authorized goals; (2) require use of bomb-damage assessment data in computing attrition to post-D-day forces; and (3) produce guidance for reconstitution of post-D-day forces, including a truly "agonizing reappraisal" of the DOD \$19 billion standby plant program for production of combat items after D-day.¹²

War Readiness Materiel Planning

While recognizing that general guidance for the recovery phase of a general war had to come from the National Security Council, the Air Force did take unilateral action during 1958-59 to determine its post-attack needs and capabilities--particularly in relation to the War Readiness Materiel (WRM) Program. There was increasing concern among both Air Force and government leaders--including the President--over USAF planning for the post-D-day period. It was felt that current plans did not offer sufficient guidance on Air Force operations for the period nor did they realistically show what the actual logistic requirements would be. In January 1959, USAF planners were directed to develop an Air Force Logistics Estimate of the Situation assuming a D-day of 1 July 1962 and evaluating the probable course of events from D-day to D+30 days. This study was to consider the effects of nuclear damage to forces and their logistic support and provide initial guidance to the Air Staff in determining the support needed for the reconstitution of military forces during the subsequent phase of general war.¹³

Along the same line, in the fall of 1958 the Vice Chief of Staff, Gen. Curtis E. LeMay, directed that a formal task group be established to evaluate total WRM Program requirements. This group undertook a comprehensive review of all aspects of the WRM Program, including the ground rules on which it was based, the policies and procedures by which it was carried out, and the cost of the materiel involved. The basic data investigated were the sortie and attrition rates used in the computation of the WRM requirements. The end result was to lower the amount of war readiness materiel to be held in storage.¹⁴

Based on the premise that the major activity of a general war would take place during the first few days, the WRM study group realistically recommended applying attrition rates at D/5 days as well as at D/30 days--the former practice. Equally realistic, recognizing that this nation would absorb an all-out nuclear blow, was the recommendation to reduce Strategic Air Command sortie rates by 50 percent, Air Defense Command by 60 percent, and the tactical forces by 10 to 45 percent. The study group also recommended computation of wartime requirements at wartime rates and peacetime requirements at peacetime rates, instead of following the current policy prescribing computation of all requirements at wartime rates. A final recommendation suggested giving major commands the authority to redistribute their WRM assets to locations where they could best be used in conducting limited wars.¹⁵

After General LeMay approved these recommendations in March 1959, the Air Force took priority action to adjust the war plans and the budget and buying programs. It anticipated that the task group's efforts would

result in substantial reductions in future procurement for WRM, help conserve vitally needed resources, reduce costs, and improve the combat readiness of the Air Force.¹⁶

In cutting war readiness stocks to the minimum, it was clear that essential items had to be protected to insure their availability following a nuclear attack. Unfortunately, a number of USAF bases and depots were in highly vulnerable locations, and 1958 studies indicated that the danger would mount as enemy capability increased through the 1962 period. As early as 1956 the NSC had directed the Department of Defense to provide means for protecting WRM during the initial stage of a general war. During the mobilization planning presentation to the NSC in December 1958, Assistant Secretary of Defense McGuire presented the OSD view on the subject and, in light of damage assessment studies, expressed the need for dispersing these stocks. The Air Force agreed with this position but insisted on being free to devise its own dispersal methods.¹⁷

In February 1959, General LeMay directed the Air Materiel Command to develop a plan for the orderly relocation and preservation of WRM stocks needed by SAC to support its wartime objectives. Headquarters USAF considered construction of facilities to protect war stocks impractical because of the high cost and rapid change in weapon location. Consequently, multiple dispersal in areas of low vulnerability appeared to provide the best guarantee of sustained logistic support in time of nuclear war. This accorded with SAC's concept of dispersing aircraft and its recommendations for WRM provisioning. The plan was to be ready for use on an emergency basis under strategic warning conditions by 1 July

1959 and, when completed, was to serve as the basis for similar action in support of tactical and airlift forces.¹⁸

AMC prepared a progress report in June 1959 describing the concept for the preservation of the WRM in support of SAC. This material was presented in July to General LeMay, who authorized further planning. AMC was directed to survey several sample areas to determine the magnitude of increased requirements that would result from adoption of the dispersal concept.¹⁹

Along these same lines, in February 1959 the Air Staff proposed that ADC take action to redistribute its war readiness stocks, particularly those on bases that the defense units shared with SAC. ADC opposed this suggestion, arguing that the short time that would be available to its squadrons to resortie against the enemy would not allow dispersal and, even if it did, the cost of storage facilities for dispersal of nuclear weapons would be prohibitive.²⁰

Maj. Gen. Mark E. Bradley, Jr., Assistant DCS/Materiel at Headquarters USAF, did not agree with the ADC position. He pointed out in April 1959 that the interceptor force would have to absorb the full effects of a nuclear missile attack and then be prepared to launch against the enemy bomber force. If, to reduce losses on the ground, ADC fighter-interceptor aircraft were "flushed" as planned, a portion of the force would have already dispersed from its home base. Many of those remaining--particularly on bases shared with SAC--would be destroyed. Accordingly, considerable nuclear ordnance and WRM would be lost to ADC before its fighter-interceptor force ever met the enemy. Since reducing the probability

of loss would offset the high cost of dispersal, General Bradley recommended that ADC revise its logistic concepts for the 1962-63 period by providing for redistribution of nuclear ordnance and WRM to areas of lesser vulnerability.²¹

II. THE AIR FORCE AND AMERICAN INDUSTRY

The Air Force has become a major factor in the national economy. With procurement authority of \$8.8 billion during fiscal year 1959--a sum representing 2 percent of the gross national product of the United States--Gen. Thomas D. White accurately referred to the Air Force as "probably the largest business in existence."¹

The ability of the Air Force--and the nation--to be ready for war is dependent on the capacity of American industry to provide the weapons of war in sufficient quantities and on schedule. Scientific and technological advances over the past few years have resulted in changes in strategic concepts that profoundly affected the Air Force's relationship with American industry. Other factors influencing this relationship involved USAF encouragement to private companies to provide their own facilities, changed procurement methods resulting from the technological complexities of modern weapon systems, and the constantly rising costs of military equipment.

Industrial Readiness Planning

In an age of ballistic missiles and nuclear warheads, military preparedness is based on a close correlation of national strategy and industrial capability. Recognizing this, the Air Force developed an industrial readiness concept founded on four strategic premises: the decisive phase of any future war will be short; the United States will win or lose the decisive phase with the resources it has on hand; there will be no time to

build up forces after an emergency arises; and besides maintaining the capability to deter general war, the Air Force must have the ability to cope with small-scale wars or periods of tension whenever and wherever they occur.

In line with these four premises, the Air Force Industrial Production Policy called for a flexible industrial base that could satisfy the production requirements of current USAF programs and also provide special capabilities to meet emergency needs. Emergency production capability for USAF items would come through compression and acceleration projects--compression for general war, acceleration for localized war.

"Production compression" means that if an attack appears imminent--or takes place--specified assembly and maintenance plants will devote their entire resources to getting as many aircraft as possible to the using commands as rapidly as possible. All combat-ready aircraft will be dispatched immediately to the using units. All aircraft that can be made combat-ready in a few hours or days will be completed and flown out, and all aircraft that can be assembled--using only parts, manpower, and other resources within the plant or its immediate vicinity--will be assembled expeditiously. When the necessary sets of parts in the plant are exhausted, compression will end. There will be no use of subcontractors, materiel, or transportation outside the immediate control of the assembly plant.²

The compression program insures that immediate, productive activity will take place in plants able to operate in the event of war. The number of aircraft that can be produced under compression will vary in accordance with the time available. The optimum period for the compression project

has been established as the two months prior to D-day, during which approximately 100 aircraft would be procured from new production and approximately 600 from maintenance depots. To begin compression earlier would have no real effect on the D-day inventory because accumulated stocks would be used up and production would be delayed until the stocks could be replenished. In the event of a shorter mobilization time the number of aircraft obtained would be proportionately smaller. For example, according to a USAF report of July 1958, given three days the compression project could provide SAC with five B-52's and eight KC-135's. Little reliance is placed on the application of the compression concept after D-day, considering the probable effects of a nuclear attack on both production and deployment. Despite the known difficulties, the Air Force holds that compression is the only realistic production plan in the face of a nuclear attack.³

Production acceleration to provide needed weapons for local conflicts, such as Korea, is primarily for selected tactical and air transport units. Should this nation be drawn into a local conflict, specified industrial plants would speed up production at a predetermined rate within a predetermined time period to replace wartime losses. The prime contractors--as well as their subcontractors--would stockpile additional amounts of selected raw materials, raw forgings, semifabricated parts, and certain long lead-time tools to absorb the shock of the initial acceleration. Additional manpower and extended work shifts are scheduled.

The basic difference between the compression and acceleration concepts is that compression is designed for general war, is of short duration, and

is tailored to individual plants, while acceleration is for localized war, goes on for months, and may affect the entire production structure.⁴

Reduction of Industrial Facilities

Since the Air Force Industrial Readiness Policy (AFR 78-14) presupposed no time for industry to expand and support a general war effort, the Air Force determined to retain under its control only those industrial facilities required for programmed production or development.⁵ This decision had great impact on the aircraft industry, for the birth of the rocket and missile era had relegated volume production of aircraft to past history. Aircraft will play a decreasing part in USAF procurement as missiles and eventually spacecraft claim an ever greater share of USAF production.

Indicative of the declining importance of aircraft production are the following figures: in 1944, at the peak of World War II, 69,956 USAF aircraft were accepted; in 1953, a Korean War year, only 5,681 were accepted; in fiscal year 1959, 1,560 were accepted. As aircraft production declined a large number of plants built after the outbreak of the Korean War became surplus. Although missile production increased, there was not enough to keep these facilities busy; and moreover, missiles could not always be manufactured in these vacant plants. These facilities therefore had to be removed from the USAF inventory.⁶

There was general agreement throughout the military establishment that a reduction in industrial facilities under DOD control was necessary. The Department of Defense studied the problem with a view to protecting both the military and the national economy. In December 1957 the Department of Defense stated that the industrial base should not exceed that needed

to support the combat readiness of U.S. forces, their phased expansion, and their consumption requirements. Reliance for maintaining this industrial base was placed in the following order of preference: privately owned facilities and production equipment; privately owned facilities and associated government-owned production equipment; and government-owned facilities and production equipment. For the protection of private industry, no government-owned facilities would be retained in excess of those required to support the strategic concept, and private industrial facilities would not be dropped to justify the retention of government-owned plants and equipment.⁷

General Bradley, Acting DCS/M in May 1959, favored a gradual reduction of the USAF industrial base, scaled to protect industry against a major disruption. Consequently, Bradley and Philip B. Taylor, Assistant Secretary of the Air Force (Materiel), decided that there would be no mass termination of facility leases and that AMC would devise plans for a gradual elimination of government-owned equipment actually in use. On the other hand, the Air Force would continue to dispose of excess USAF plants and to reduce the procurement of new facilities. During fiscal year 1959 the Air Force began disposal of nine industrial properties.⁸

Whenever possible, contractors were urged to provide their own buildings and machine tools for government contracts. Previously the Air Force had only limited success with this policy because of the large quantities of equipment needed by aircraft companies to meet volume production goals. With the transition to increased missile procurement, however, USAF planners felt the time appropriate to demand rigid enforcement of the policy. Where

specialized test facilities were needed that would have no commercial use and there was no assurance that production would follow, the Air Force was willing to provide funds for the building of facilities. In all other cases--unless it was clearly to the Government's advantage--contractors had to provide their own financing or join the Government in a combined purchase.⁹

In the interest of giving small business a fair share of USAF work, the Air Force placed rigid controls on the handling of general-purpose production equipment (GPPE)--machine tools. Major Air Force prime contractors provided with government-owned equipment had a competitive advantage over small companies owning their own tools. Furthermore, providing prime contractors with GPPE placed them in a position to perform work that would otherwise, in all probability, be subcontracted.¹⁰

Requiring contractors to invest their own funds should reduce overall cost to the Air Force and eliminate the costly practice whereby many contractors hold government-owned equipment against anticipated future business. It should also eliminate the cost of storing large quantities of idle equipment and force contractors to follow more normal business practices, thus becoming more economy conscious.¹¹

During fiscal year 1959, USAF-owned machine tools were reduced from 101,800 items valued at \$1.16 billion to 88,900 worth \$1.09 billion. The number in active use fell from 73,100 to 64,900. Most of the idle items and active ones that would become idle were to be declared excess and disposed of as rapidly as possible. Only the most modern tools, including those applicable to missile production, were scheduled for retention.¹²

The tax amortization program declined in importance as an incentive to contractors to provide their own facilities, even though the number of tax amortization cases approved by the Air Force during fiscal year 1959 increased to 102 from the 57 of the previous year. This was because the program had actually been reduced significantly since 1957 when Public Law 85-165 restricted approval almost wholly to research and development contracts. The Air Force requested legislation liberalizing the program, but OSD rejected this appeal since it did not want to jeopardize its own request for an extension of the existing law, scheduled to expire on 31 December 1959.¹³

There was evidence during 1958 that the Air Force was having success in its campaign to persuade industry to invest its own funds for facilities. In a request to Secretary of the Air Force Douglas for additional USAF contracts, the chairman of United Aircraft acknowledged the aircraft industry's lack of investment in its own facilities. To strengthen his request for USAF work, he emphasized that United had invested in facilities far more than any other contractor--over \$200 million in the previous 10 years. In an unsuccessful effort to secure the contract for the J-58 engine to be used in the B-70, the general manager of Pratt & Whitney Aircraft, a division of United, pointed out that all the facilities required for the project were available or close to completion and that no facility funds need be appropriated by the Government either to develop or produce the engine.¹⁴

Procurement Problems

Air Force procurement is often affected by factors having little bearing on military strategy: the impact of the USAF procurement dollar

on the nation's economy, the spiraling cost of increasingly complex weapon systems, budgetary limitations, and congressional criticism of the procurement concept for weapon systems.

Procurement and Employment

Care is required in the timing of USAF procurement. It is essential that the military receive its materiel in an orderly fashion, coinciding with the strategic plan. The Air Force, however, recognizes the impact of its programs on the economy and by advanced planning endeavors to avoid any unnecessary upheavals in the employment situation.

Such considerations affected the procurement of the TM-76B Mace. In September 1958 it was pointed out to the Under Secretary of the Air Force that if the production authorization were delayed until 1 January 1959, approximately 200 Martin Company employees would be dropped from the payroll in mid-1960. To prevent this, the DCS/Materiel recommended authorization for procurement of long lead-time items.¹⁵

Advance planning was particularly necessary in the procurement of items of decreasing importance. The requirement for jet engines, for example, decreased significantly. USAF procurement officers followed the situation closely, and in September 1958 it appeared that the General Electric Company was not taking adequate measures to prevent a sharp reduction in the working force at its Gas Turbine Division, Evendale, Ohio. General Bradley informed the company that consolidation of the division's five separate departments was essential in light of decreased current and projected production rates. The Air Force recognized the necessity of maintaining a stable work force in Evendale, and the company

was advised to initiate a gradual realignment in order to preclude a sharp reduction in employment at a later date.¹⁶

Spiraling Costs

A more difficult problem was the spiraling cost of USAF weapons. For example, between fiscal years 1957 and 1959 the overall cost of the GAM-87 Skybolt increased 70 percent, the F-105 increased 25 percent, the GAM-77 Hound Dog 25 percent, and the TM-76 Mace by more than 20 percent. Similar increases occurred in the price of equipment. The prime example was the ALQ-27--electronic countermeasure equipment for the B-52H--which by the end of June 1959 was in danger of pricing itself out of existence.^{*17}

Faced with rising costs and rigid budgetary limitations, OSD maintained a firm control over expenditures. In July 1958 it compiled a sizable list of USAF programs, many with high priority, on which procurement was deferred pending OSD review and approval. By the fall of 1958 the review of most items was completed, and the programs were completely or partially released. This delay, however, coupled with the partial releases, seriously aggravated procurement and production management.¹⁸

Congressional committees working on appropriations in 1958 were gravely concerned over the apparent inability of the Government--particularly the Department of Defense--to hold a checkrein on the increasing cost of contracts with private industry. The Secretary of Defense was admonished to study this problem and to take steps toward a solution. As

* See below, p 28.

a result, in December 1958, OSD requested the Air Force to submit information covering three phases of the problem: the impact of technical improvements and developments on pricing, efforts to create incentives in USAF contracts for cost savings, and other specific actions taken by the Air Force to achieve stability of pricing levels.¹⁹

In January 1959, in conjunction with AMC, the Air Staff summarized the information requested, pointing out that international competition for military superiority created a constant demand for technically superior weapons. Requirements often had to be met within compressed and overlapping time cycles, and geometric increases in effort were required to obtain significant advances or breakthroughs. The number, variety, and scope of production and performance tests had increased in proportion to the increased complexity of the new weapons. Likewise, the cost of ground support equipment to maintain operational readiness had "mushroomed."["] The unit cost of the new weapons also spiraled upward because their great destructive power made it necessary to manufacture only small quantities of them.²⁰

It was obvious that any reduction in cost had to come from a closer correlation of effort between the Air Force and industry. The Air Force concentrated on the incentive-type contract to create a stimulus for contractors to reduce costs. Placing incentive clauses in contracts as soon as possible put greater cost and profit responsibilities on the contractor, resulting in more effective cost-reduction programs. For example, most USAF contracts are let on cost plus a fixed fee that is based on a percentage of the original cost estimate. The percentage of the fee is raised in proportion to the savings on the original cost estimate or lowered if costs are higher than the estimate.²¹

The Secretary of the Air Force and his staff held several meetings with leading airframe, missile, and electronic contractors during 1957-59 to solicit their cooperation in cutting their operating expenses to a minimum and in stabilizing prices. The Air Force closely monitored contractors' overhead costs, including overtime and the reduction of staff and operating personnel, and gave closer surveillance to subcontracting activities. It made more effective pre-award surveys of contractor capabilities as well as more effective and frequent reviews of contractor performance throughout the life of the contract. AMC and ARDC cooperated in reducing the number of weapon system configurations, engineering change proposals, and "gold-plating." Finally, increased emphasis was placed on standardization of aircraft, missiles, engines, and related equipment.²²

Weapon Systems

In hearings before the House Subcommittee of the Committee on Appropriations in the spring of 1959, the Air Force had to defend its procurement procedures against the argument that the weapon system approach was responsible for the decline in the percentage of prime contracts awarded to small businessmen.* The Air Force maintained that it

*USAF weapon system contracting fell into three categories: (1) A prime contractor, under Air Force surveillance, managed the entire project, including all supporting equipment. In developing the B-58, for example, Convair was responsible for the engineering design, subcontracting, and performance. (2) Associate contractors, each under Air Force contract and supervision, were jointly responsible for the production of a weapon system. For instance, Hughes Aircraft, as an associate of Convair, was under direct USAF contract and produced a fire-control system for the F-106. Both contractors were responsible for the compatibility of the system with the aircraft. (3) The Air Force purchased government-furnished aeronautical equipment, such as bombing-navigation systems, for more than one prime contractor. This method was normally used when a component was compatible to two or more weapon systems, but it has lessened in importance as weapon systems became more complex.

was not the "system" but the increased complexity of weaponry and the shift to missiles that prevented most small business firms from acting as prime contractors. Since very few small businesses had the necessary technological capabilities required, they were forced to shift from prime contracting to subcontracting. The Air Force, however, sought to assure them ample opportunity to participate in USAF production.

One important technique used in this endeavor was the USAF "make or buy" concept whereby the Air Force and the contractor jointly determined which components the contractor would fabricate in his own shops and which he would buy from small business firms by subcontract. The Air Force was in a strong position to do this when government funds were required for new facilities. It took extreme care to insure that the USAF contract was not being used to justify building up a specialized engineering force or plant to manufacture components when it would be to the best interest of the Government for the contractor to purchase these items elsewhere. Additionally, the policy of requiring contractors to provide their own machine tools and facilities--with specific exceptions--worked to the benefit of the small businessman.

Defending USAF procurement practices at a House hearing in April 1959, Lt. Gen. Clarence S. Irvine, DCS/Materiel, pointed to the success of subcontracting in the F-108 and B-70 programs. More than 73 percent of the total dollars to be spent on these weapons would be subcontracted. The money would go to more than 70 major subcontractors in 19 states. In addition, the prime contractors placed approximately 10,000 orders for less significant items with both large and small businesses throughout the country. ²³

There was concern within the Air Force about the trend away from government-furnished aeronautical equipment (GFAE) toward contractor-furnished equipment (CFE) for the newest weapon systems because of the adverse effects in standardization and supply and maintenance. The trend was expected to continue, however, because the great complexity of the modern weapon demanded "tailor made" subsystems; to insure compatibility, the prime contractor had to have full responsibility for all the component parts. There was the possibility of USAF logisticians becoming so far removed from production as to endanger their ability to compute requirements, anticipate shortages, and provide the control needed when strikes or other troubles occurred in industry. The Air Force recognized this danger and instructed AMC to examine the problem and take steps to insure the necessary controls.²⁴

The Air Force was also frequently criticized because it procured most of its items through negotiation rather than through formal advertising. Here again, the bulk of the procurement dollar went for missiles and advanced aircraft--weapons not procurable by advertising because of their newness and complexity. Of a total of \$10.84 billion spent with U.S. business during fiscal year 1959, only \$0.9 billion was considered suitable for purchase by advertisement. The Army and other agencies, however, spent an additional \$1.5 billion of USAF money for common supplies and services through formal advertising.²⁵

To serve as a substitute for the conventional advertising procedure, the Air Force initiated the use of two-step formal advertising. On the recommendation of a subcommittee of the House Committee on Armed Services

in March 1957, the Air Force made a nine-month service test of the new method and thereafter adopted it as a standard means of procurement. Under this system advertising procedures are frequently used in place of negotiated procurement procedures. In step one, contractors submit technical proposals without prices for review by USAF laboratories of the technical acceptability of the products offered. In step two, those contractors who have submitted satisfactory proposals are given an opportunity to bid under normal advertising procedures and the award is made to the lowest bidder. While two-step advertising takes longer in certain circumstances than either conventional advertising or negotiation, it is anticipated that with continued experience the time will be shortened.²⁶

Production Problems

Aircraft and Missile Schedules

The success or failure of a procurement program depends on its ability to provide the weapons of war in accordance with strategic needs and within the financial limitations of the budget. Since it is impossible to maintain rigid schedules because of the various pressures arising over a 12-month period, and a certain amount of flexibility is expected and desirable, there are periodic adjustments in aircraft and missile production schedules. The reasons for these adjustments during 1959 fell into four main categories: production difficulties, including management and engineering problems; changes in USAF force structure and requirements; dollar limitations and price adjustments; and responsibility to allied air forces.²⁷

The history of the F-105B fighter-bomber reveals the complexity of the factors inherent in the production of new weapons. There were three production schedule changes for the plane from July through December 1958. The first reduction, from 159 to 126 for the fiscal year, occurred in July and resulted from the manufacturer's (Republic Aircraft Corporation) unrealistic timing from final assembly to flyaway. In an effort to maintain the force buildup, however, the new schedule provided for a shorter reorder lead time.

Cuts in expenditures for tactical weapons caused the Weapons Board to make a second reduction in August--to 111 aircraft, thereby negating the effort to maintain the planned force structure. Then in September the contractor informed the Air Force that engineering and configuration errors in manufacturing the plane's intake duct had resulted in degraded engine performance. After three months of effort, it was determined that a "fix" could be achieved only through the introduction of a new duct. Unfortunately, retrofit of the F-105B was economically impractical, and the new duct would be introduced only in later versions of the plane. Early in December the contractor informed AMC that he could not meet the production schedule, following which AMC conducted a survey that confirmed the contractor's inability. This, plus continued budgetary pressure, resulted in a new schedule on 10 December reducing the total fiscal year purchase to 68.²⁸

Difficulty with other models of the F-105 occurred in 1959. Because of its expense and the possibility that another available plane could carry out the mission, in January the Chief of Staff suggested considering

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a substitute aircraft. The Weapons Board examined other fighters and decided that there was no suitable replacement. It did recommend, however, elimination of the two-place F-105E and a commensurate increase in production of the single-place F-105D, chief successor of the F-105B, to enable the Air Force to reach its projected force goal a year earlier while remaining within budget ceilings. In March, Secretary Douglas approved the recommendation and provided the alternatives of increasing the monthly production rate of the F-105D from 11 to 17 or buying the plane at the current rate over a longer time span. The former course was chosen and was reflected in the May 1959 production schedule.²⁹

Production difficulties, the need for a balanced force structure, and limited defense funds all played a part in revisions of the fiscal year 1959 production schedule for the F-101B. The greatest factor was the inability of the contractor to produce in accordance with his forecast program. In a strong reprimand to the manufacturer--McDonnell Aircraft Corporation--in November 1958, the Air Force acknowledged the difficulties associated with the design and production of a modern interceptor. On the other hand, it pointed out clearly that it must depend on the producer's ability to correctly forecast his capabilities since USAF programming actions were based on these figures. The Air Force insisted that because budgetary limitations had caused a reduction in the interceptor program, it was absolutely essential that new weapons enter combat units on the scheduled dates. It plainly implied that future procurement would be heavily influenced by the ability of aircraft manufacturers to live up to their forecast schedules. After a recomputation of attrition requirements, it was possible to reduce the 1959 requirement for F-101's from

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107 to 93, but the cost had risen to \$1.66 million per plane compared with the original \$1.41 million.³⁰

Construction difficulties--primarily the result of inadequate quality control--plagued the orderly production of the SM-62 Snark air-breathing missile. Early difficulty with component reliability apparently had been overcome, and the final stages of the development program progressed satisfactorily. In the fall of 1958 component failures recurred, and 6 of 11 Snarks scheduled for 4,400-nautical-mile flights failed to reach the target area. Only one was acceptably accurate. The Chief of Staff in September pointed out the seriousness of the situation to the prime contractor (Northrop Corporation) and warned that unless the problems were corrected the entire inventory of combat missiles would be expended in flight tests. A joint investigation by AMC and ARDC indicated that more aggressive action by Northrop was expected to result in better reliability. Reorientation of the flight-test program was recommended to insure a satisfactory demonstration of reliability. General Irvine agreed and informed the Chief of Staff that a delay in the operational date of the missile would be necessary.³¹

Change in USAF force structure and requirements resulted in changes in the procurement of F-106's and KC-135's. Reducing the F-106 unit equipage from 25 to 18 aircraft per squadron diminished the total number of F-106's required to 340 planes--165 during fiscal year 1959.³² In October 1957 a reevaluation of the KC-135/B-52 ratio indicated that the number of tankers required for production in fiscal year 1958 could be reduced from 157 to 130 aircraft. During the fall of 1958 the decision

to add an additional B-52 wing, plus the need for initial tanker support for the B-58, resulted in boosting fiscal year 1959 production requirements for the KC-135 from 55 to 81.³³

The difficulty of maintaining production schedules in the face of rising costs was clearly evident in the production of ALQ-27 electronic countermeasure equipment (ECM) for the B-52H. The Air Force had to reduce the number of aircraft that would use this item to keep within funding limitations. Nevertheless, in February 1959 it was noted that costs were still rising and that the Air Force would have to pay at least the original estimated overall cost for a reduced amount of ECM equipment. The ALQ-27 system remained under constant fire during the year and required repeated justification. In June the entire production program was terminated, but SAC reiterated its firm requirement for the equipment and it was reinstated four days later. At the end of June 1959 the ALQ-27 remained tentatively a part of the B-52H configuration although there were indications that high cost might eventually result in its cancellation.³⁴

The buildup of allied air forces also affected USAF production programs--the F-104 for example. In October 1957 the Air Force decided to cut back the F-104 program from 582 to 294 aircraft, but it delayed terminating production because of the West German government's interest in the plane. On 4 December 1958, General Bradley reported that the German government would not reach a decision until March 1959. It was argued that it was to the best interest of the Air Force to terminate immediately the existing F-104 contract since cancellation meant a recoupment of \$130 million. Late in December, Secretary Douglas authorized

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the termination of the F-104 contract. Provision was made for the Germans to order the plane at a later date.³⁵

Ground Support Equipment

The Air Force tried to insure that ground support equipment (GSE) would be operationally ready at the same time as the air vehicle because of the complete dependency of the latter on adequate and timely availability of GSE. The high cost and complexity of these items made the task difficult and dictated a high degree of management attention.

In an effort to minimize the complexity and diversity of GSE, Assistant Secretary of Defense McGuire asked the Air Force in August 1958 to provide leadership for a joint standardization project with the Army and Navy. In accepting the assignment the Air Force noted that actions to provide superior equipment quickly were often in direct conflict with the objectives of standardization. The implication was obvious--the Air Force would not sacrifice operational capability for standardization.³⁶

Achievements

Despite production difficulties, in June 1959 the Air Force could point to solid achievements in both aircraft and missile manufacture during the fiscal year. It received 1,560 aircraft of an originally scheduled 1,616. Among the reasons for the reduction were a stretchout of B-52G, F-105, and F-106 production and a cutback of F-101B production. Important new aircraft accepted included the B-52G, F-104C/D, C-130B, and H-43. Procurement programs for other aircraft were completed: the B-52F, F-102A, F-104A/B/C, and the C-130A. Additionally the Air Force accepted 426 guided missiles and spacecraft, including 241 strategic,

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67 interceptor, and 118 tactical missiles. Among those received for the first time were the XGAM-77 Hound Dog, the IM-99 and XIM-99 Bomarc, and the XGAM-73 Quail. The 12,511 guided aircraft rockets accepted consisted of 7,114 Falcons and 5,397 Sidewinders.³⁷

III. USAF CONSUMER LOGISTICS

The success of the USAF logistic system is best measured by its ability to maintain the Air Force at all times in a position not only to fight the "big" war but to meet its daily requirements in a world in tension. In essence, this means the ability to supply essential materiel when needed, to maintain both weapons and men in operational readiness, and to provide efficient transportation.

Improvement of Supply Management

The Air Force placed emphasis on a system designed to speed materiel through the pipelines by means of rapid communications, fast data processing, accelerated maintenance, and efficient transportation. It sought to effect direct supply from the source to user by closing depots in the United States and overseas, thus eliminating the middleman and saving both time and money. Stress was also laid on assuring prompt support to the units in the field through the USAF priority system and the assignment of across-the-board support responsibilities for designated weapon systems to Logistic Support Managers. Other efforts to conserve manpower, time, and money included the continued selective management of "hi-value" items, the phased procurement of spares, and the purchase of "low-value" items in economic quantities or in kit form.¹

Materiel at depots and on bases in June 1959--exclusive of aircraft--totaled around \$15 billion and was projected to increase in value by roughly \$500 million per year. Statistics showed that about \$6.3 billion

in supply stock was issued each year to the users, and of this amount \$2.3 billion worth consisted of goods consumed or worn out annually--POL, gaskets, brushes, etc. Nonconsumable items, such as aircraft engines, were subject to repair, and approximately \$4 billion was spent annually on their repair and replenishment. As weapon systems became obsolete and were phased out, the supply inventory for these weapons became surplus and was subject to redistribution or disposal. This was a major factor in the amount of materiel declared surplus and disposed of each year. Property originally valued at \$2.67 billion came under this program in fiscal year 1959 alone.²

Depot Management of Weapon Systems

Intended to synchronize all logistic support of weapon systems, the depot management concept vested the authority and responsibility for the complete supply support of a weapon in a single USAF depot control point. These depots, designated Logistic Support Managers, acted as worldwide AMC agents. One at San Bernadino, Calif., for example, filled this function for the Atlas, Titan, and Thor, while other depots acted as managers for support of the B-52, B-58, F-100, and SAGE. The system was considered for application to other new weapons entering the inventory.³

The expansion and success of this program became essential as the missile inventory increased rapidly. In fiscal year 1955 about 12 percent of USAF procurement funds went for missiles. It was estimated that within a few years the Air Force would be investing as much in missiles as in aircraft. Logistically, this meant that the Air Force must be prepared to support two different kinds of weapons simultaneously. Additionally, there was little room for error in missile support, for

missiles are more completely dependent upon precise logistic support for their ultimate effectiveness than any weapon in history. Since there is no pilot whose skill, judgment, or courage can compensate for malfunctions once the missile is launched, optimum performance must be built into the weapon and maintained constantly at reliable levels.⁴

Interservice Supply

In cooperation with the Department of Defense, the Air Force stressed the importance of avoiding unnecessary duplication of effort growing out of the endeavors of each service to provide for all its logistic needs even when another service might be able to meet many of these requirements. For example, as the predominant user of aviation fuels, the Air Force entered into an interservice supply-support agreement, effective 1 July 1959, whereby it would assume responsibility for providing fuel support to the Army and Navy overseas--with the exception of Cuba where the Navy would assume responsibility. Under another interservice agreement of September 1958, the Air Force insured that the Army and Navy would obtain required items from aircraft being reclaimed at the USAF reclamation site at Tucson, Ariz.⁵

Interservice supply support, however, posed difficulties because of the differing missions of the services and their separate methods of supplying their combat forces. Also changes in force structures and relocation of units affected support of one service by another. The reduction of Army forces in Japan, for example, caused the Army to modify its logistic services to the Air Force. Complications occurred in the implementation of the agreements, reinforcing the Air Force's belief that it must have a greater degree of logistic self-sufficiency.⁶

Present and potential single manager operations—elements of interservice logistics—were strongly supported by OSD. The Air Staff, with the support and assistance of the Secretary of the Air Force, "consistently opposed arbitrary and unnecessary extensions of single manager operations into other areas," since it was felt that evidence concerning the effectiveness of the concept was inconclusive. General Bradley, emphasized his concern "over the persistent attempts of OSD to involve themselves in logistic operations and to advance unwise management schemes based upon oversimplification, generalizations, and purely economic considerations." Accordingly, the Air Force expressed concern to OSD over the role of the single manager in times of emergency and the emphasis on businesslike economy to the detriment of combat support. A further indictment declared the assignment of responsibility to a single manager was in direct conflict with the prerogatives of the military services.⁷

Supply Automation

Coincident with the demands for greater speed and efficiency, the Air Force paid close attention to development of a standard data system for supporting advanced weapon systems. With more than \$50 million scheduled for electronic data-processing equipment (EDPE) in fiscal year 1959 and the outlook indicating even higher costs, an orderly program became necessary. Therefore in September 1958 the Air Force made AMC responsible for the redesign and automation of the total materiel system.⁸

AMC was already experimenting at its San Bernadino depot, where one of the largest and most modern electronic data-processing centers was

constructed to expedite logistic support of ballistic missiles. This center was connected by a high-speed communication network with all other AMC installations, all major industrial facilities, and all launching sites. Service tests at Hamilton AFB, Calif., and Offutt AFB, Nebr., quickly showed the system capable of providing immediate response to demands from base level. Transactions were processed as they occurred and records were current as of the last transaction. The system was designed to provide immediate availability of all interchangeable assets, immediate requisitioning of items not in stock, automatic stock replenishment, continuous adjustment of stock levels, automatic notification of excesses, and weapon system accounting.⁹

In light of the superiority of the electronic data method over the punched card method being used, the Air Force requested approval from the Department of Defense to supply 18 SAC and 7 ADC bases with the new equipment. By 30 June 1959, equipment was already installed at four SAC and two ADC installations.¹⁰

Phased Procurement of Spares

In January 1957 the Air Force introduced a new concept to control the procurement of expensive aircraft spares by delaying production of initial spares and reducing the total quantities procured. First, only minimum quantities of selected items were procured to satisfy early unpredictable demands. Second, when enough experience was gained, the total requirement for initial spares was estimated, but only a portion was procured and distributed in final usable form. A buffer stock of finished/semifinished items or raw materials remained in the production

inventory of the contractor for use in meeting demands for quick fabrication and delivery. Third, expensive insurance-type items were not procured, but arrangements were made with the contractor for immediate delivery of such spares from his production stock when they were needed. These items included doors, panels, etc., normally not subject to replacement except in the event of structural damage to the aircraft.¹¹

The policy was initiated in May 1958 with the Boeing Aircraft Company, and deferred procurement of some 34 items resulted in a net saving of \$760,000. A standard contract amendment applying these procedures was established for use in negotiating all future airframe contracts.¹²

An additional refinement, adopted in July 1958, provided for the procurement of initial spares for an aircraft only for that period of time when it would actually be in the inventory during the first 12 months of the delivery program. Thus, a plane accepted 5 months before the end of the first 12-month period received only 5 months' support instead of 12 months' as before. This innovation conserved the available funds for first-year procurement of spares and reduced the accumulation of excess, obsolete, and secondary spare items resulting from design and program changes during the initial production period.¹³

On 1 January 1959 a detailed study of AMC procurement of initial spares and its planned procurement for the balance of the fiscal year showed the value of the new policy. The system was so successful that for fiscal year 1960 the Air Force presented to Congress a budget estimate for initial spares that amounted to 20 percent of aircraft flyaway

cost. During fiscal years 1954-57 the cost of initial spares averaged 29 percent of flyaway cost.¹⁴

Maintenance of Modern Weapon Systems

The current Air Force concept of general war--fighting with what is available at the initiation of hostilities--required a maximum number of aircraft and missiles to be operationally ready at all times. Toward this goal, the Air Force used approximately 40 percent of its personnel in the maintenance effort and anticipated needing an even greater percentage in the future. The maintenance function was elevated to a higher level in SAC with the establishment of a deputy commander of maintenance in all SAC wings. Management improvements included a man-hour accounting system and a standardized data-collecting system to provide pertinent information concerning failure rates, repair times, etc. The revision of Air Force Manual 66-1 in 1958 was especially significant because it thoroughly reorganized the maintenance function throughout the Air Force.¹⁵

Maintenance Problems

The day-to-day operation of high-performance jet aircraft introduced new and different maintenance problems. Three of the most important difficulties were directly related to the performance of these aircraft and the operating conditions to which they were subjected: sonic fatigue, cyclic fatigue, and fuel contamination. The introduction of increasing numbers of missiles into the operational inventory will undoubtedly add many more problems in the immediate future.

Sonic fatigue is associated with sound vibration and pressure created by the blast and sound from the jet engine exhaust. These pressures,

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related to the volume of sound produced, create structural fatigue damage starting at the 140 decibel mark. The pressures have grown as engine thrust has continued to increase--from 146 decibels for the F-86 to 169 for the B-52.¹⁶

Both the B-52 and the KC-135 experienced sonic fatigue damage in the secondary structure or trailing edges. While the safety of the aircraft was not immediately affected, an excessive maintenance burden was created. "Quick fix" techniques were developed to combat this fatigue, but neither the Air Force nor industry had the final solution. Replacement of sections of conventional skin and the installation of additional ribs to check cracking and breaking of metal parts served as stopgap measures. The final answers must come with corrective measures being incorporated into future design.¹⁷

Cyclic fatigue damage was discovered in 1958 when careful inspection of several B-47 crashes revealed cracks of a progressive nature in various wing sections of the aircraft. This was determined to be the result of increased weight and prevailing gusts of wind at low and high altitudes during takeoff, in-flight, and landing operations. Failure of the metal occurred at points of high-stress concentration.¹⁸

Boeing engineering analysts found that the problem--except in extreme cases--did not preclude continued operation of the planes. Flight restrictions limiting the B-47 to 360 knots, 185,000 pounds gross weight with full wing tanks, and a maximum stress of 1.5 G's allowed the air fleet to continue operating. Three aircraft discovered to have cracks through the entire cavity area of the wing were grounded.¹⁹

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The Air Force undertook an immediate corrective program--Project Milk Bottle. In addition, the National Aeronautics and Space Administration joined in a cyclic testing-to-destruction program. As a result, structural failure was uncovered in a longitudinal member as well as in the wing area. Modification of the planes began and was scheduled for completion prior to the time the situation would have become serious.²⁰

A thorough evaluation disclosed that the B-47 was good for an additional 3,300 flying hours after structural modification, permitting its operational utilization through 1968-69. But should SAC find it necessary to increase the low-level flying requirements from 17 to 34 missions per year, the service life of the B-47 would be reduced to approximately 1,900 flying hours, permitting its use only until 1964-65. Furthermore, an extensive structural inspection program would be required throughout the service life of the plane.²¹

A series of flameouts and several accidents during 1958-59 focused attention on a relatively new maintenance problem--fuel contamination. The advent of gas-turbine and turboprop engines, consuming gas-turbine fuel at a rate five times faster than reciprocating engines, created a requirement for cleaner fuel since the small clearances in jet engine fuel-control systems made them more susceptible to contamination by solids--either sediment or ice. Adding to the difficulty, jet engine fuel has a greater affinity for water than has regular aviation gasoline and holds rust and dirt particles in suspension longer. Although the Air Force needs larger amounts of cleaner fuel for its engines, it is forced to use fuel which is extremely hard to keep clean.²²

A study of the sediment problem disclosed that fuel in refineries had a minimum of solid content. Contamination took place in transport via pipeline or tank car. Suggested corrections included development of an instrument to continually sample fuel as it is dispensed and shut it off when a specified contamination level is met, installation of better filtration systems on pipelines and dispensers, and provision of more storage facilities on base to allow a longer period for settlement.²³

Ice in aircraft fuel lines came from three sources: incomplete water separation by ground refueling equipment; water-in-solution in fuel, which in severe weather precipitated as free water when the fuel was chilled—either on the ground or when the aircraft was operating at high altitudes; condensation of water from the air above the fuel in the fuel tanks.²⁴

Both forms of contamination caused clogged fuel filters that cut off the flow of fuel to the engines. The immediate temporary correction was the installation of new fuel filters with bypass valves. Under development was a fuel additive (Phillips #52), tested in B-52's and KC-135's in March 1959. It worked well in resisting the accumulation of ice but deteriorated the top coat sealant in the tanks. A more complete solution of the icing problem came from the development of fuel heat exchangers that maintain fuel temperature above 32 degrees. By 30 June 1959, 425 heaters had been delivered.²⁵

Depot Maintenance

During 1958-59 the USAF weapon inventory began to shift from manned aircraft to a mixture of aircraft and missiles. This resulted in superfluous facilities for depot maintenance and raised the question of

extending cross-servicing and reducing contract maintenance as a means of better utilizing the available facilities. This position, suggested by the Department of Defense, was firmly rejected by the Air Force.²⁶

Assistant Secretary Sharp agreed that the depot maintenance structure needed revision to meet current needs, but he held that the feasibility of cross-servicing was definitely limited and that the answer to any existing overcapacity lay mainly in realigning depot capacity. Action had already begun to reduce the depot-level maintenance potential by approximately 32,000 man-years and three million square feet of shop facilities. In general the Air Force rejected extension of cross-servicing and reduction of contract maintenance because these approaches did not fully consider future requirements based on current policies and concepts. In particular, the rapid shifts from one weapon system to another and the evolution within systems made contractual maintenance necessary until the Air Force could acquire the experience to do the job.²⁷

During 1959 the Air Force laid down the following three-point policy on depot-level maintenance responsibilities: (1) workloads most vital to the Emergency War Plan (EWP) would be handled within the Air Force; (2) nonvital workloads--those not directly connected with the EWP--would be handled by contract or cross-service agreements; and (3) the Air Force would retain or acquire the ability to manage the entire depot maintenance workload, including contract facilities.²⁸

Improvement of Transportation System

The Chief of Staff set forth in June 1958 the Air Force position on the mission and employment of the Military Air Transport Service (MATS), the principal agency for USAF logistical airlift.* He stated that the primary justification for the existence of MATS was to insure effective and timely support of the armed forces under emergency conditions, particularly during the early phases of a general war. Its size and capability were to be determined by the requirement for an airlift capability immediately responsive to military command. In peacetime the airlift employed in maintaining a state of trained readiness was to be used to reduce the costs of meeting peacetime airlift requirements of the Department of Defense. But this function was in no way to interfere with the capability for instantaneous transition from peacetime to emergency operations.²⁹

To obtain the most economical use of military transportation resources, MATS commenced operating under the Industrial Fund on 1 July 1958. The first two months of operation under the new system made it clear that the original tariff schedule was too low to allow the command to break even financially. After the MATS Industrial Fund financial statement for 30 September 1958 showed a loss of \$6,526,415, OSD approved increases effective 1 December 1958. On 11 March 1959, MATS submitted a report showing a potential net operating profit for the fiscal

* For operational coverage of MATS activities see R. D. Little, USAF Operations, 1958-1959 (AFCHO, 1961). This study makes no attempt to cover the very important AMC transportation functions: LOGAIR, contract commercial air cargo transportation; LOGLAND, motor truck movement of small shipments; LOGSEA, expedited shipping procedure in ocean transportation. Missile transportation will be covered in a forthcoming AFCHO publication by Jacob Van Staaveren, Logistics for Ballistic Missiles.

year of \$22,252,254 if the 1 December rate were maintained. However, a second revision, effective 1 March 1959, corrected this trend, and MATS ended the year solvent but with a considerably reduced profit.³⁰

While recognizing the need for efficiency in transportation, the Air Force did not agree with an OSD proposal to establish a single manager organization for all transportation within the Department of Defense. In February 1959, Assistant Secretary of the Air Force (Financial Management) Lyle S. Garlock maintained the Air Force position that problems could be resolved within existing organizational arrangements and assigned responsibilities. The establishment of a single manager for all transportation would violate the basic principle of transportation as a vital and integral part of logistic support of combat forces, and it would create problems that would outweigh any theoretical advantage. Consequently, Garlock believed that the end result would be to superimpose still another echelon on existing organizations that would have to be maintained.³¹

In keeping with this outlook, Headquarters USAF rejected a MATS proposal for an extension of its airlift capability through a "wholesale transfer of Air Force units to the single manager airlift agency." In rejecting the proposal in February 1959, the DCS/Materiel, General Irvine, pointed to the loss of airlift support that would be sustained by critical USAF missions in the event of such a change. In the same vein General White stated: "I do not intend, under existing circumstance, to transfer any additional airlift capability to MATS unless directed to do so by higher authority."³²

Recognizing the need for commercial airlift augmentation, particularly in the event of war, the Air Force has used commercial airlines for

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carrying passengers and cargo over the years. It strongly indorsed the peacetime policy that passenger airlift requirements not satisfied by MATS should be met by commercial augmentation. Such a policy was deemed an appropriate employment of commercial airlift consistent with the maintenance of a minimum military capability. MATS spent \$62.2 million for commercial airlift during fiscal year 1959--\$17.6 million for cargo and \$44.6 million for passengers.³³

But the Air Force vigorously opposed an OSD proposal to require that commercial airlines be given preference for the movement of all DOD personnel. Assistant Secretary of the Air Force Taylor stated that such a policy was undesirable and operationally unfeasible because it would place limitations on military operations requiring the support of MATS. Noting the pressure being applied by commercial interests for more military business, Taylor pointed out that the Army might decide to move more of its people by air, in which case it was implied the commercial air interests might lessen their demands.³⁴

Logistic Capability for Local Wars and Emergencies

The USAF materiel function was put to the test during 1958-59. Crises in three areas of the world--Lebanon, Taiwan, and Germany (Berlin)--challenged basic policy, strained supply capability, and deluged the USAF transportation system with demands for the rapid movement of vast quantities of goods.

Air Force Policy

Actions taken in connection with these crises focused attention on the question of prestockage of materiel for local wars and emergencies.

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The basic USAF position on this subject was affirmed in an Air Force Council decision of 24 September 1957, which stated that the defense of the United States during general or limited war situations could be met with the forces and resources on hand and in current programs. There was opposition to this position during the spring and early summer of 1958 from advocates of special limited war forces, but the JCS, after reviewing the situation, agreed with the Air Force position. The National Security Council was informed of this conclusion and confirmed the appropriate statements on limited war contained in basic national security policy. The validity of this position was severely tested during 1958-59.³⁵

Supply Capability under Stress

In the Lebanon operation, starting on 14 July 1958, MATS provided augmentation of 36 C-124's to USAFE for the airlift of a U.S. Army task force, in addition to MATS aircraft already in the theater.* By 8 September, MATS aircraft, flying 314 sorties, had moved 5,486 tons of cargo and 5,316 passengers to the Middle East. TAC supplied its own transports to airlift support personnel and equipment to Adana, Turkey, for CASF Bravo. The Ninth Air Force used 43 C-130's in this operation, routing them through Bermuda, the Azores, and France. The routing of the entire CASF over the southern route caused extreme congestion at terminals.³⁶

For the Taiwan operation, beginning in August 1958, MATS provided a special cargo and personnel airlift for the deployment of Tactical Air

*For a detailed account of the Lebanon crisis see Wilhelmine Burch and R. D. Little, Air Operations in the Lebanon Crisis--1958 (AFCHO, 1960).

Command units (CASF X-Ray Tango).^{*} MATS C-118's, C-121's, and C-124's made 81 trips (19 for the first stage, 52 for the second, and 10 for the third). A total of 1,472 passengers and 860.1 tons of cargo were carried. The decision to airlift--rather than fly--12 F-104's to Taiwan further complicated the task. In this first large-scale movement of high-performance aircraft to a troubled area, 20 C-124's and 4 C-97's lifted the disassembled F-104's and their personnel and essential support equipment.³⁷

This heavy movement of materiel to Taiwan created a substantial backlog of freight at Travis AFB, Calif.--the MATS west-coast terminal. As a result, the pipeline time for F-100 and F-104 spares stretched out to 19 days early in the operation. The major causes of the bottleneck grew out of the poor coordination between MATS and AMC, the failure of the commands to inform MATS in time of their increased requirements, and the assignment of 1-5 supply precedence[†] to PACAF and TAC units, resulting in a flood of "priority" traffic.³⁸

MATS initiated an embargo at Travis beginning the last week in August and lasting until the middle of September, during which time only mandatory cargo in Air Priorities 1 and 2 was accepted. By December 1958, when the crisis was pretty well over, items requested by PACAF for F-100's

^{*}For a detailed account of the Taiwan crisis see Jacob Van Staaveren, Air Operations in the Taiwan Crisis--1958 (AFCHO, 1960).

[†]1-5 precedence indicates a very high supply-support priority. It is not to be confused with transportation priorities such as Air Priorities 1 and 2.

were taking 8.6 days from the time of request until delivery at the aerial port in the Pacific. F-104 spares were arriving in 10.4 days.³⁹

The Soviet Union's threatened crisis over Berlin, centering on 27 May 1959, impelled General Bradley early in March 1959 to request that AMC take extraordinary action to improve the readiness of the tactical forces. At the same time, to prevent a backlog such as had occurred at Travis in 1958, he warned DCS/Operations at Headquarters USAF against taking a "shotgun" approach in assigning supply precedence ratings to tactical units. Pointing to the lessons learned in the Lebanon and Taiwan crises, Bradley recommended the granting of a two-month 1-5 precedence only to those units that might be called upon to fight. Indiscriminate assignment of 1-5 precedence would slow down vital support since giving priority to all resulted in priority to none.

Nevertheless, DCS/Operations gave overriding precedence to 10 CASF fighter squadrons; TAC squadrons on rotation; 2 TAC air refueling squadrons; 3 TAC troop carrier squadrons; and all USAFE and PACAF fighter, bomber, missile, tactical reconnaissance, air refueling, and troop carrier squadrons. Both AMC and SAC raised serious objections to this action, and in March 1959, General LeMay rescinded the 1-5 precedence except for a small number of tactical units. This procedure proved effective, and by the end of May the selected units were combat-ready. The flyaway kits of the designated TAC squadrons were 100 percent complete or scheduled to be complete in June, and the AOCF rates were very low.⁴⁰

Effect of 1958-59 Operations

The experience of the Lebanon and Taiwan crises led to a reappraisal of USAF preparedness for local war--particularly in the matter of prestockage.

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At the USAF Commanders Conference in November 1958, Gen. Laurence S. Kuter, PACAF commander, recommended that the prestocking policy be modified to avoid repetition of bottlenecks. A RAND study supported this recommendation, suggesting that increased stockage and increased deployment of materiel would reduce the amount of airlift required in time of crisis.

Although the Air Force remained firm in its policy that local war could be supported from general war resources, the events of 1958 showed the need for greater flexibility. In December 1958, DCS/Materiel informed the Air Force Council that "actions were in the mill" to give theater commanders more prestockage for general war and flexibility in positioning stocks--thus providing improved capability within general war resources.⁴¹

These "actions" were tied to AMC's Improved Logistic Program, which--because of new weapon system concepts, changing force composition, and revised deployment requirements--planned to close down 13 depots overseas and 14 in the United States by 1 July 1962. In September 1958 a comparison had been made between the recent materiel requirements for the Lebanon operation and the items marked for disposal because of depot closings. The study revealed a need for greater discrimination in disposal practices. It was found that certain items, such as tents, shop equipment, auxiliary powerplants, generators, electric cable, radio transmitters, and POL pipeline invasion kits that had been listed as excess, were appearing on immediate operational requirement lists. In October, therefore, General Bradley instructed AMC and other major

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commands to review the situation "with a view toward retention of those items which are useful in readiness operations" ⁴²

In January 1959 the Air Force decided to retain in oversea storage those articles needed for periods of local war, civilian disaster, and other emergencies. Quantities were to be for the support of a 10,000-man force in each of the following areas: northern Europe, central Europe, southern Europe, northern Pacific, and southern Pacific. These items were to be excess to all theater operating and WRM requirements, adaptable to long-term storage with no supporting maintenance, and unrestricted by controls of higher headquarters or other services. In May, AMC received the necessary guidelines to permit a timely beginning of this program. ⁴³

Although the current general war concept and changes in the composition of current and planned inventories had drastically reduced requirements for conventional munitions, the international incidents of 1958-59 focused attention on the need for local war supplies, causing concern in the Joint Staff and Air Staff over the maintenance of sufficient supplies of "iron" bombs for such contingencies. Based on the assumptions that the use of iron bombs in general war was highly improbable and that limited war would require only six months' support, DCS/Materiel determined that there were sufficient quantities of new-series nonnuclear bombs to provide for any limited war campaign. In fact, since the logistic support objective of any type war was a 60-day level of WRM items, the limiting factor in a nonnuclear war would not be iron bombs but certain logistic items needed to support the wartime flying activity--POL, spares,

engines, auxiliary fuel tanks. Accordingly, the Air Force sanctioned the expeditious disposal of World War II-type iron bombs.⁴⁴

The Air Force continued to maintain that local wars would and must be fought with the resources made available for general war, but it began to interpret this policy with increasing flexibility. Early in 1959, Gen. Edwin W. Rawlings, AMC commander, cautioned that unless the Air Force developed a capability to fight local wars it ran the risk of having the other services develop the potential. This could result in the diversion of funds from the Air Force, with far-reaching effects on its overall capability. Maj. Gen. Jacob E. Smart, Assistant Vice Chief of Staff, USAF, in March 1959 agreed with Rawlings' position and indicated that the Air Force was studying prestockage of WRM needed to support both general and limited war.⁴⁵

Other developments also indicated growing USAF concern with the local war problem. While the CASF was intended to support general war also, its primary function was to respond quickly to a local war situation. The trend toward greater flexibility was also evident in the Air Force's relation to the industrial economy. Although the Air Force was vitally concerned with preparing American industry for its role in general war, USAF adoption of the acceleration technique indicated recognition of the need for insuring production of goods for limited war.

Despite a firm belief in the need for maintaining a massive deterrent force, USAF leaders recognized that the Air Force had to be able to meet the Soviet threat wherever it occurred. This will in all probability mean being prepared to fight in situations similar to Taiwan

and Lebanon. To accomplish this will require broader application of the term "general war resources." Prestockage of conventional weapons and supplies for local war and emergencies appeared to be a necessity-- be it in the name of general war or local war.

(Material on this page is UNCLASSIFIED.)

NOTES

(Unless otherwise noted, the sources may be found in the signature files of DCS/Materiel, under titles of subjects, e.g., MLP, MPP, etc.)

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G L O S S A R Y

AFCHO	USAF Historical Division Liaison Office
AS	Air Staff
ASAF	Assistant Secretary of Air Force
ASD	Assistant Secretary of Defense
AVC/S	Assistant Vice Chief of Staff
CFE	contractor-furnished equipment
COMAMC	Commander, Air Materiel Command
D	Director
DOD	Department of Defense
ECM	electronic countermeasure
EDPE	electronic data-processing equipment
FM	Financial Management
GFAE	government-furnished aeronautical equipment
GPPE	general-purpose production equipment
GSE	ground support equipment
Intv	Interview
LL	Legislative Liaison
LP	Logistics Plans
M	Materiel
ME	D/Maintenance Engineering
MLP	D/Logistics Plans
MMP	D/Materiel Programs
MP	D/Materiel Programs
MPP	D/Procurement & Production
MSS	D/Supply & Services
MTP	D/Transportation
nd	no date
NSC	National Security Council
ODM	Office of Defense Mobilization
OSD	Office, Secretary of Defense
Pdn	Production
P&P	Following DCS, means Plans & Programs; following D, means Procurement & Production
Prog	Program
Rqmt	Requirements
SAF	Secretary of Air Force
S&L	Supply & Logistics
Trans	Transportation
U-SAF	Under Secretary of Air Force
WRM	War Readiness Materiel