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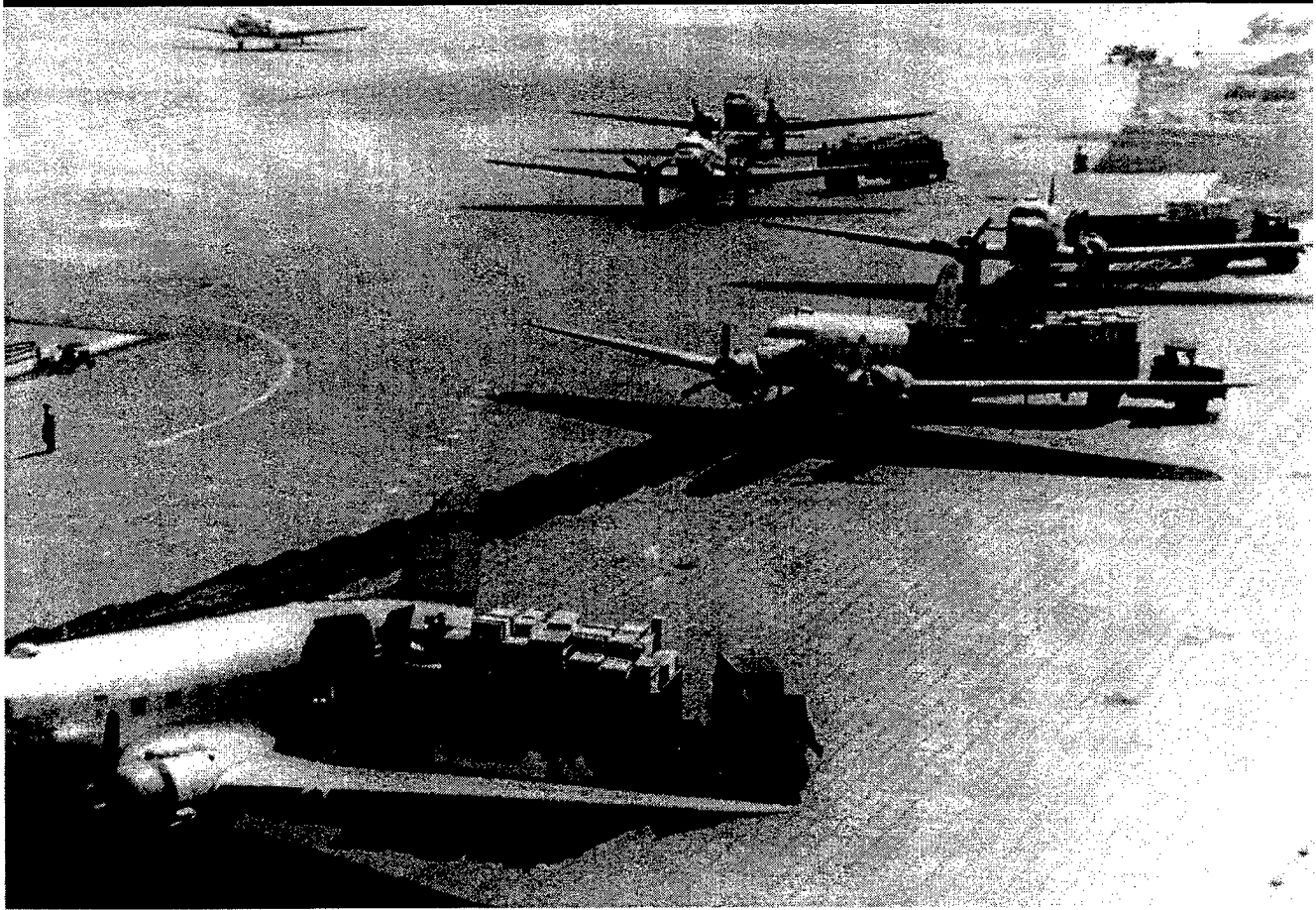
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Global Supply and Maintenance for the Berlin Airlift, 1948-1949¹

Roger G. Miller, PhD



Colonel Frank Howley, the tough, irrepressible commander of the American military garrison in Berlin, watched with wonder the first Douglas C-47 Skytrains land with food for the people of Berlin. "They wobbled into Tempelhof," he later wrote,

Coming down clumsily through the bomb-shattered buildings around the field . . . the most beautiful things I had ever seen. As the planes touched down, and bags of flour began to spill out of their bellies, I realized that this was the beginning of something wonderful—a way to crack the blockade. I went back to my office almost breathless with elation, like a man who has made a great discovery and cannot hide his joy.²

Colonel Howley had indeed witnessed something special. On 24 June 1948, the Soviet military had clamped a tight blockade on the land and water routes between the Western occupation zones of Germany and the Allied sectors in Berlin. Three air corridors also connected Berlin with the occupation zones. Taking advantage of these, Lieutenant General Curtis LeMay, Commander of the United States Air Forces in Europe (USAFE), had already begun flying supplies to the military garrisons in Berlin two days before the blockade. But something more was

needed. General Lucius D. Clay, the American military governor in Germany, and General Sir Brian Robertson, his British opposite number, turned to air power as the only means of feeding and supplying the 2.5 million German citizens in Berlin. The result was "Operation Vittles," which, together with the Royal Air Force's "Operation Plainfare," would soon become the greatest humanitarian airlift in history.

The airlift began as a short-term expedient to buy time for Western diplomats to negotiate an end to the blockade that threatened to starve 2.5 million Berliners, but it soon grew into a huge, well-oiled machine that delivered enough food, supplies and, above all, coal, to keep the city alive and to ensure freedom for its people. At the beginning, the US Air Force had barely a hundred weary C-47s in Germany. LeMay knew these were not enough and he quickly requested strategic air transports, four-engine Douglas C-54 Skymasters. As these joined the airlift in increasing numbers, the amount of cargo delivered increased dramatically and continued to climb despite all obstacles.

On 28 July 1948, the US Air Force's premier air transport expert, Major General William H. Tunner, arrived in Rhein-Main

and took command of the airlift. Tunner and his staff of experienced air transport experts—who had learned their business on the “Hump” airlift to China during World War II—imposed order on all aspects of the airlift. Tunner required the careful coordination of every aspect of the airlift, including detailed procedures and exact duplication and precise execution of each phase of the operation, from loading cargo to the return landing. Aircraft maintenance teams, aircrews, supply personnel and thousands of lesser-known activities were sharply regimented. All personnel performed their duties according to strict directives, and statistical charts and tables tracked the process at every stage. Tunner demanded that all activities take place in a constant, unvarying cadence. “This steady rhythm, constant as the jungle drums, became the trademark of the Berlin Airlift.”³



Major General William H. Tunner, Commander, Combined Airlift Task Force, is considered the father of modern airlift. (Official Air Force Photo)

Ultimately, Skymasters flew the narrow southern corridor at carefully controlled three-minute intervals, landed in Berlin at the same intervals and returned to their home bases through the center corridor around the clock, seven days a week. This rate, Tunner noted, “provided the ideal cadence of operation with the control equipment available at the time.” He explained, “At three-minute intervals, this meant 480 landings at, say, Tempelhof, in a 24-hour period. Under ideal circumstances, this schedule could mean 1,440 landings daily at three air fields.”⁴ Tunner viewed the corridors between Western Germany and Berlin as a conveyor belt with aircraft spaced evenly along the route. All the aircraft moved at the same speed, executed their maneuvers at the same spot and followed the predetermined schedule to the second. Like

a conveyor belt, the airlift could be slowed down or sped up as necessary, but it was relentless in its regimentation.⁵

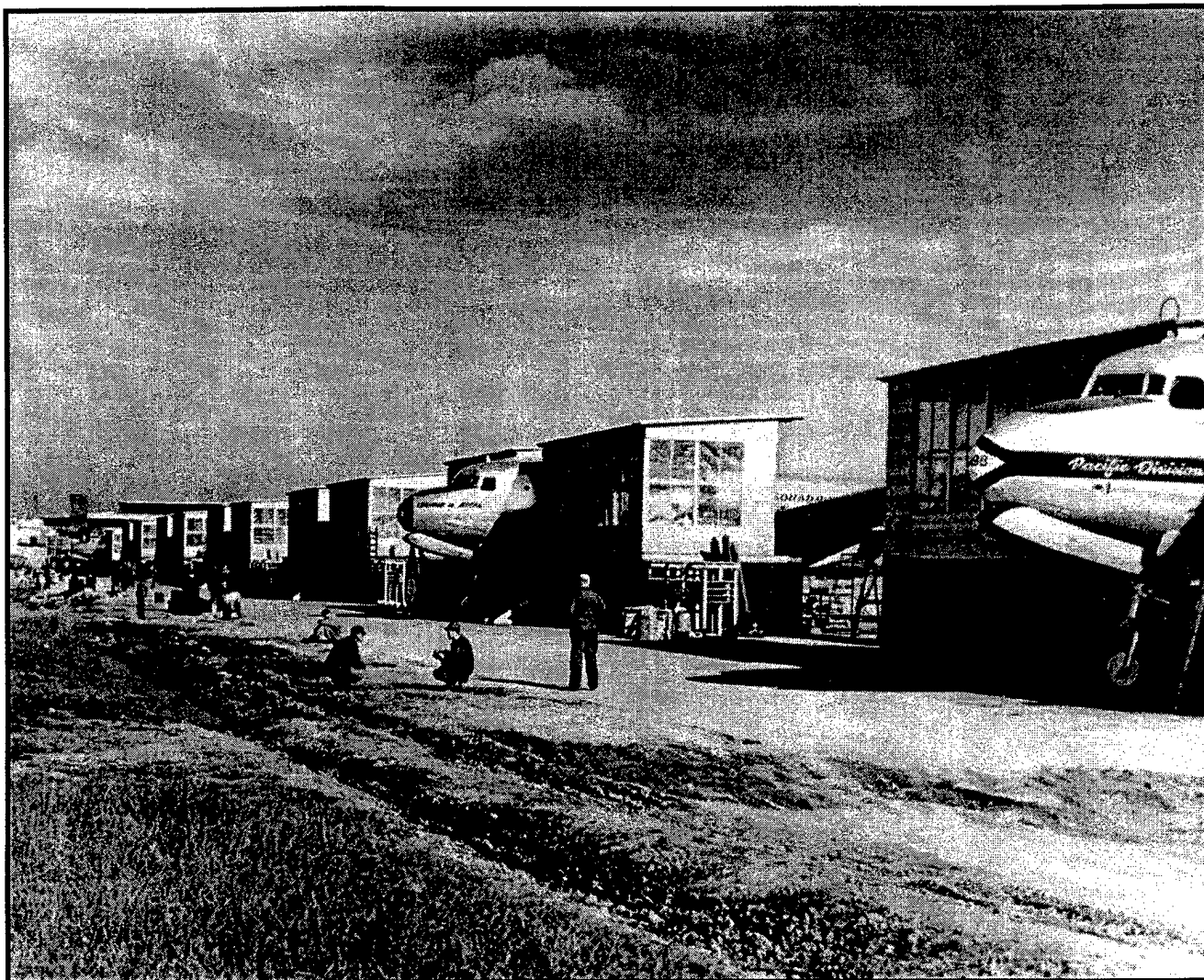
On 15 October 1948, the US Air Force and the Royal Air Force united Operation Vittles and Operation Plainfare under the Combined Airlift Task Force (CALTF) commanded by General Tunner, with Air Commodore John W. F. Merer as his deputy. Establishment of the CALTF gave Tunner complete operational control of the airlift. The results were unprecedented; tonnage continued to climb, even in the face of the winter of 1948-1949, which Soviet leaders—and not a few of their Western counterparts—believed would bring the airlift to a halt. By spring 1949, the airlift had won; its victory was punctuated by the “Easter Parade” in mid-April 1949 when it delivered 12,941 tons in 24 hours. This showcased airlift’s capacity to deliver huge amounts of cargo and demonstrated conclusively the ability of Tunner’s system to manage an unprecedented density of traffic. Thanks to the Berlin Airlift, the Soviet Union had no options. Its leaders had to negotiate over the future of Germany with the Western powers on even terms. On 12 May 1949, the Soviet Union lifted the blockade. The Western powers continued to operate the airlift until 30 September 1949, stockpiling enough food and other necessities to forestall future Soviet threats to the city.

Maintenance and Supply for the Airlift

An enormous logistical endeavor in its own right, the Berlin Airlift was made possible by a massive logistical effort that stretched from the flight lines at the airfields in Germany, through depots in Germany and England, to maintenance and supply facilities across the United States. The effectiveness of this system was critical to the success of the airlift. The most serious problem faced by the airlift, other than flying under inclement conditions, was the servicing and maintenance of the airplanes that performed the work.⁶

From the beginning of the airlift through the arrival of the first C-54s, C-47s were air transport in Europe. While much beloved in Air Force (and Army Air Force) lore, they were unpopular in the airlift role. USAFE’s Skytrains were all more than five years old and had more than 2,000 flying hours, most under wartime conditions. Some still wore the black and white vestiges of D-Day invasion stripes that dated from 1944. Their age and worn condition frustrated the maintenance and supply personnel who had to keep them in the air. In one example, intergranular corrosion and cracks in the landing gear bracing strut attachment fittings grounded many C-47s at a cost of some 850 hours in inspection and maintenance. Further, the severe shortage of parts threatened routine maintenance and technical order compliance despite every attempt to requisition them. The worst problem with the C-47s, though, was their inadequacy for the job expected of them. Their three-ton cargo capacity was insufficient and their operational performance was inferior to the larger, four-engine C-54s. The first Skymasters landed at Rhein-Main on 1 July, and, as additional numbers arrived, they gradually replaced the Skytrains. The last C-47 left the airlift on 30 September. Reliance on a single, standard airplane not only enabled Tunner and his staff to streamline every aspect of operations on the airlift but it vastly simplified supply and maintenance.⁷

Maintaining the C-54s still presented serious problems. First, since the few Skymasters that had operated in Europe prior to the



Completed maintenance dock area for repair of C-54 aircraft engines, 20 September 1948. (Official Air Force Photo)

airlift were assigned to the Military Air Transport Service (MATS), USAFE lacked the means to support them. Supplies and parts for the aircraft were not part of the USAFE supply system; maintenance facilities capable of handling them were in short supply and few mechanics had experience with the big birds. Second, the squadrons deployed from the US brought only a limited number of mechanics and few parts with them; most ground personnel and stocks of supplies arrived by ship, taking several weeks to reach Europe. Conditions on the airlift compounded these problems. The Skymaster had been designed and built to fly passengers over long distances, a mission that featured few takeoffs and landings and long hours at a standard cruising speed. Now, Tunner called upon them to make a large number of short flights carrying extremely heavy loads. Frequent takeoffs under maximum power strained engines and wore out parts; repeated landings with ten tons of cargo wore out tires, burned up brakes and severely stressed the C-54's fragile nose gear. The airlift placed a tremendous burden on engines and airframes and ate up spark plugs, brakes and tires at an incredible rate. The pounding caused by the frequent landings loosened bolts and rivets and fractured metal pieces. The Air Force determined its stock levels by calculating the wear and tear on

aircraft flying a standard number of hours per year. Skymasters on the Berlin airlift used up a year's worth of flying hours in a few weeks, placing demands on the system far in excess of what it was capable of filling.⁸

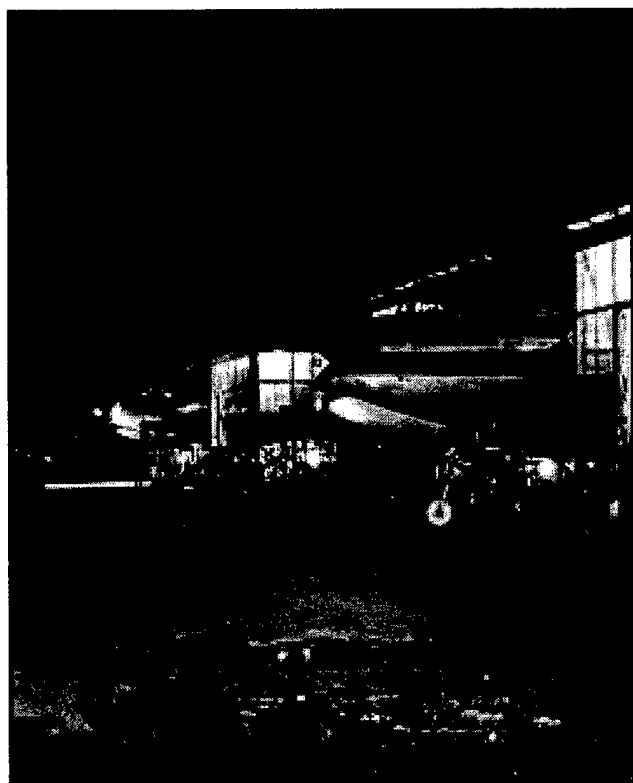
The limited inventory of C-54 parts Air Force-wide compounded the situation. There were simply too few parts to stock the supply pipeline and ensure a steady flow of parts so that they were immediately available when required. The shortage of parts in the pipeline system meant that standard practices, like delivery of parts by ship, were insufficient to maintain supply levels, and thousands of tons of parts, equipment and supplies had to be flown from the US to Europe.⁹

USAFE Letter 65-60, published on 19 August 1948, established basic supply and maintenance procedures for the Airlift Task Force (Provisional). Essentially, all common items of Air Force supply came from USAFE's primary supply facility, Erding Air Force Depot. Erding also maintained the necessary stocks to support depot-level maintenance for C-54 engine accessories, instruments, surfaces and electronic components. Task Force Headquarters designated Rhein-Main as the specialized supply depot for C-54 support, and directed it to establish a 60-day supply level for the big aircraft.

Oberpfaffenhofen Air Force Depot in Bavaria established electronics maintenance for radios and radars. When American units were based at two airfields in the British zone of occupation—operations began at Fassberg in August and at Celle in November 1948—they requisitioned C-54 parts from Rhein-Main. Finally, Erding supplied equipment for the initial installation of AN/ARC-3 radios in the C-54s. Replacement parts and spares for the radio came from Rhein-Main.¹⁰

In addition to its functions as a supply depot, Erding also accomplished sheet metal work, repaired aircraft instruments and performed special work impossible at other bases, like the elimination of fuel-line leaks. Erding's direct support of the airlift was especially important during the summer of 1948, when it had to send many of its enlisted mechanics to reinforce the shorthanded maintenance crews servicing the C-47s at Wiesbaden.¹¹

Cycle maintenance on the C-54s called for preventive maintenance during standardized inspections at carefully determined points—daily and at 50 hours, 200 hours and 1,000 hours—to ensure the integrity of the aircraft and its safe performance. Maintenance control personnel carefully scheduled these inspections and thoroughly documented the status of the airplane, the deficiencies identified and the repair actions taken. Maintenance on the airlift was a continuous process that operated 24 hours a day, seven days a week, and precise scheduling followed accurately was the key to keeping the airplanes flying. The maintenance control unit within the airlift headquarters constantly updated a color-coded control board, displaying the status of each aircraft and providing the overall status of the airlift fleet at a glance.¹²



Looking down the line of maintenance docks during night crew operations of the C-54 aircraft maintenance project at the Oberpfaffenhofen Air Force Depot. (Official Air Force Photo)

Maintenance planning by the end of July 1948 called for field maintenance to be a theater responsibility conducted at the flying bases. The critical 200-hour inspections would take place at Oberpfaffenhofen until a World War II air depot at Burtonwood in England reopened for operations. The 1,000 hour inspections would be the responsibility of Air Materiel Command in the US.¹³

Mechanics at the bases and depots in Europe accomplished their work in terrible weather. Rain, fog and cold—combined with poor facilities, long hours and shortages of tools and parts, and intensified by the tremendous pressure of keeping the airplanes flying—made maintenance a miserable, nasty job. And the lack of amenities in the form of proper housing and, often, poor food did little to inspire the men. Major Vance Cornelius, a veteran maintenance officer at Rhein-Main, reported the state of affairs was little different at his base than those Eighth Air Force mechanics had faced during World War II, except Eighth Air Force had a better supply of parts.¹⁴

In addition to the living and working conditions, maintenance on the airlift suffered severely from deficiencies in the number, experience and ability of the mechanics and technicians available, especially early in the operation. Inexperienced personnel were a special problem. Not only were they inefficient, but they could double or triple the time required for even the simplest of repairs. Inexperience cost the airlift hundreds of hours of flying time. The situation improved over time, thanks to better screening of personnel sent to Germany and an intensive on-the-job training program established by the CALTF, but as late as April 1949, a newly arrived mechanic fresh from the C-54 course at Keesler Technical Training Center could encounter a sergeant mechanic who had never been taught to change the carburetor on the R-2000 engine. Further, the C-54 squadrons were not manned to support a round-the-clock operation, and the Air Force was unable to provide enough mechanics, especially trained ones, to provide all the support necessary. Ultimately, the personnel shortages forced USAFE to recruit German nationals, most former Luftwaffe mechanics, to serve with the airlift. Since few spoke English and all lacked experience with C-54s, this step required translating maintenance manuals, technical publications and inspection checklists into German and establishing an intensive training program.¹⁵

The best evidence of the progress made in developing a strong maintenance capability came between April and July 1949 when the airlift averaged better than 190,000 tons of cargo per month, some 60,000 tons per month more than during the previous four months, although the number of aircraft assigned to Operation Vittles remained virtually unchanged.¹⁶

Field Maintenance

Airlift maintenance personnel tended to follow standard Air Force practices, but this often proved impossible. The shortage of personnel, especially early in the airlift, prevented the assignment of a crew chief and crew to each aircraft at Rhein-Main. Consequently, maintenance planners had to alter techniques to make the most of the scarce mechanics.

Maintenance at the field level was divided into three functions. First, each aircraft received a daily preflight check. Second, "turnaround" maintenance provided routine servicing when an aircraft landed. It also addressed pilot complaints. Third, maintenance personnel conducted routine checks at 50, 100 and

150 hours. To accomplish these checks, a squadron had 148 maintenance personnel assigned—often many less were on hand—divided into three shifts working 12 hours on and 24 hours off. Each shift, in turn, was further divided into three crews. An “alert crew,” usually 12 to 16 men, carried out the preflight checks of the airframe, engines, landing gear, fluids and electrical systems. They also inspected the radio and radar systems. The alert crews also conducted turnaround maintenance. In this process, aircraft pilots notified the tower of any complaints or problems before they landed. If the problem was minor, the alert crew called for fuel, oil and another load and accomplished repairs on the flight line. If the work was beyond their capability, they turned the aircraft over to the appropriate crew that specialized in engines, electrical systems, hydraulics, radios, props or other systems.¹⁷

The third maintenance function, 50-hour inspections, provided preventive maintenance designed to reduce the need for unscheduled maintenance by identifying and correcting problems before they became serious. This work included a thorough cleaning of the aircraft, the replacement of spark plugs, an oil change and an inspection of the airframe, engines and aircraft systems. The 50-hour inspection usually took about five hours to complete.¹⁸



Inspection and maintenance of airlift planes at Oberpfaffenhofen Air Force Depot. (Official Air Force Photo)

200-Hour Inspections

With each aircraft flying an incredible number of hours, the Skymasters reached the 200-hour inspection mark quickly. This inspection was critical to the performance of the C-54 and the life of its airframe. It could not be omitted. And since the aircraft had to be removed from the operation for several days, it rapidly became a major concern for airlift planners. To standardize and accelerate the process, USAFE planners decided to concentrate 200-hour inspections at one location. They reopened a former World War II air depot at Burtonwood in northern England for that purpose, because it had sufficient space and facilities for a complete inspection line. Opening Burtonwood and readying the facilities took time, however, and on 6 August, Tunner wrote Major General Laurence S. Kuter, Commander of MATS, that 200-hour inspections would take place at Oberpfaffenhofen near Munich until Burtonwood was ready.¹⁹

The 1421st Maintenance Squadron (Provisional) began operations at Oberpfaffenhofen during the first week of August, and by the 15th the unit had seven officers and 236 men. The first C-54 arrived at Oberpfaffenhofen on 7 August. The 200-hour inspection was much more than a casual evaluation of the airplane. It was a thorough inspection and repair of the aircraft that included a complete cleaning, overhaul, reconditioning and replacement of worn parts and equipment. First, depot personnel removed all loose equipment, drained the oil and conducted a general inspection. Second, the aircraft exterior was thoroughly washed down with a chemical solution, scrubbed and rinsed with water, while other workers swept and vacuumed the inside of the aircraft. Third, personnel conducted the 200-hour inspection tasks and completed all work necessary on props, engines, ignition and other systems ahead of the firewall. Fourth, they accomplished the same tasks on all other airplane systems. Fifth, maintenance personnel inspected the hydraulic system, wheels, brakes and tires. Finally, they serviced the aircraft, replaced all equipment removed earlier and conducted a last inspection. USAFE also took the opportunity provided by the 200-hour inspection to make modifications to the aircraft beyond the work done during the inspection. For example, Tunner ordered all unnecessary navigation equipment removed from the C-54s during the inspection in order to save weight and, in another case, beginning in September, depot personnel installed new deicer boots on all C-54s.²⁰

The demand for 200-hour inspections soon forced Oberpfaffenhofen to divert 95 percent of its work force to the C-54s. Even this number proved insufficient, a problem compounded by conflicting instructions from the airlift headquarters which set the depot's quota at the completion of four inspections per day, but would only allow 13 C-54s at the depot at one time. Since the time required to repair deficiencies uncovered during the inspection varied substantially from airplane to airplane, the wash racks either had a line of aircraft waiting for service or stood empty. The work force, accordingly, might have to work many overtime hours or might have to be laid off for several days. Recognizing the wash racks as the main problem, Oberpfaffenhofen hired sufficient local German workers in September to handle any influx of aircraft.²¹

In October, Airlift Task Force Headquarters increased the daily quota of aircraft from four to six and assigned Major Jules A. Prevost, a retired maintenance expert from Pan American Airlines recalled to active duty for 60 days, to Oberpfaffenhofen. Major Prevost established a “block system” that slightly increased production; however, at the same time, the depot began preparation to close down the 200-hour inspection program and transfer it to Burtonwood. In all, Oberpfaffenhofen completed 43 aircraft inspections in August, 108 in September, 137 in October and 96 in November. The last C-54 completed inspection at Oberpfaffenhofen on 22 November 1948.²²

During World War II, Burtonwood served as one of the largest modification and repair centers in England. Reduced to a storage area for mothballed RAF bombers after the war, the facility had been allowed to deteriorate: roofs leaked, buildings sagged, equipment rusted and facilities decayed. A USAFE survey team went to England in August to inspect the installation, and by the end of the month, the Air Ministry had informally agreed to the establishment of the depot. The construction necessary for

reopening Burtonwood began on 1 September, and Colonel Paul B. Jackson, Director of Supply and Maintenance at Oberpfaffenhofen, transferred to the 303rd Air Repair Squadron at Burtonwood on 2 November. Oberpfaffenhofen also built 13 wooden maintenance docks and six wing docks and sent them to England. Oberpfaffenhofen also supplied experienced men who applied, in the enclosed hangars at Burtonwood, the methods and techniques established at the depot in Germany.²³

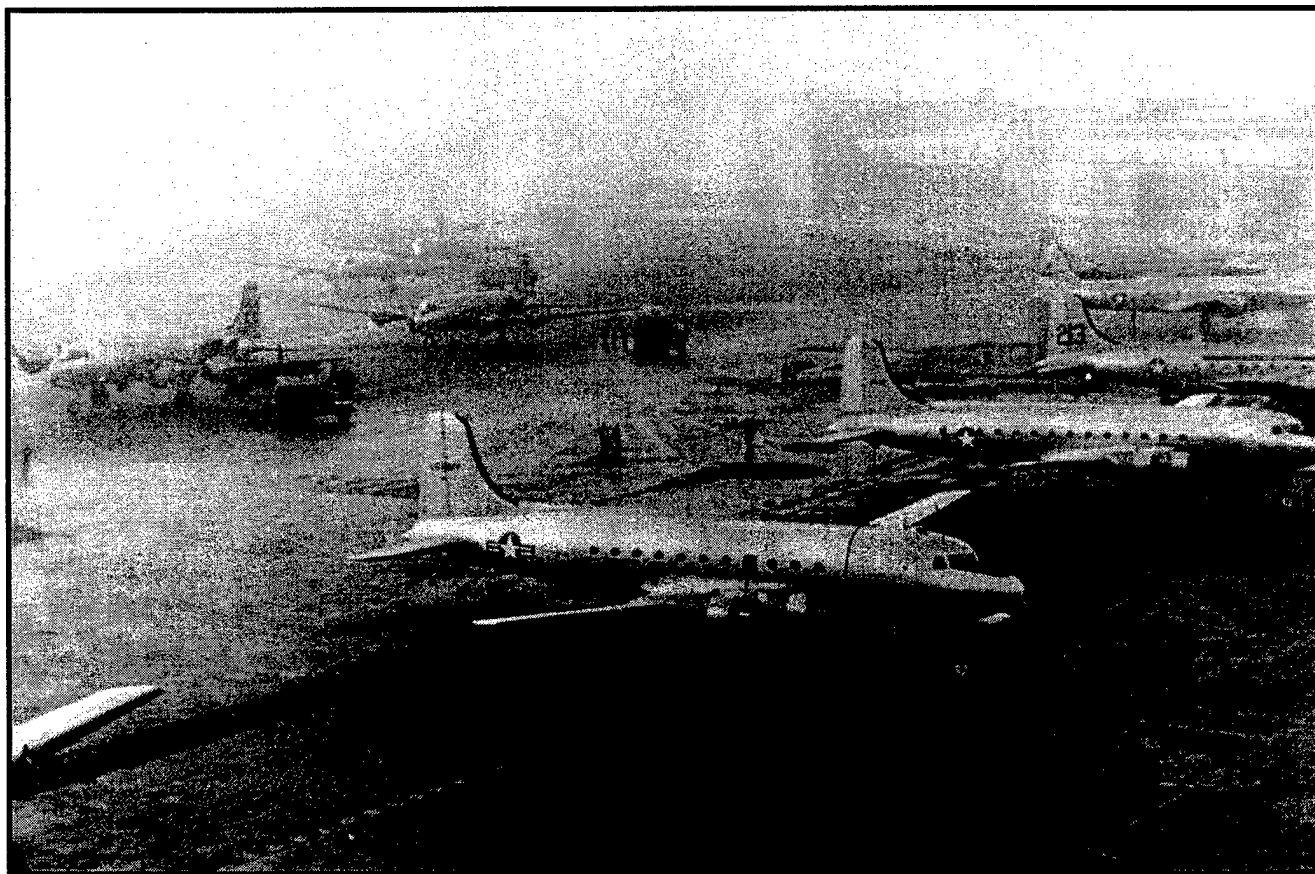
One measure undertaken at Burtonwood was a weight-stripping program for the D, E and G series of the C-54s. When weighed, most C-54s were found to be about 300 pounds lighter than the data books listed them. Then, the maintenance crews removed roughly 2,200 pounds of excess equipment during the renovation process. The aircraft thus emerged from the 200-hour inspection with a payload some 2,500 pounds greater than before. The payoff for the airlift not only lay in increased cargo capacity, but in less complicated maintenance thanks to the removal of equipment.²⁴

The transfer of operations from Oberpfaffenhofen to Burtonwood, however, severely impacted the production program at a critical time. In November, when Oberpfaffenhofen produced 45 inspections, Burtonwood completed only 18. The difference was made up by conducting 200-hour inspections at the flying bases: nine at Fassberg, six at Wiesbaden and 24 at Rhein-Main, a total of 102 for the month. This situation, however, was highly unsatisfactory since the bases had to use scarce equipment and facilities and the work was a severe drain on maintenance crews who should have been doing daily

maintenance. The situation remained unsatisfactory for several months. In December, Burtonwood accomplished 49 inspections, just over a quarter of those required by the airlift fleet, causing Tunner and his staff considerable worry. Again, the flying bases had to make up the difference: Rhein-Main performed 47 inspections, Wiesbaden 16 and Fassberg nine. Worse, in January, Rhein-Main had to conduct 70 of the 155 200-hour inspections required that month. Additional personnel and equipment subsequently improved the situation at Burtonwood. The depot conducted 85 inspections in February, then more than doubled the total to 177 in March, enabling USAFE to end 200-hour inspections at the flying bases in April, although Rhein-Main continued to do a small number each month. Production at Burtonwood peaked in July 1949 at 256 inspections.²⁵

1,000-Hour Inspections

Behind the Berlin Airlift stood the worldwide maintenance and supply capability of the United States and, in particular Air Materiel Command, headquartered at Wright-Patterson AFB, Ohio, with its system of depots at Sacramento, California; Ogden, Utah; San Antonio, Texas; Oklahoma City, Oklahoma; Mobile, Alabama; Middletown, Pennsylvania; and Warner Robins, Georgia. A steady stream of airplanes, engines and subsystems flowed in and out of the depots as the airlift grew. The depot at San Antonio overhauled Pratt & Whitney engines, while those at San Antonio, Middletown, Mobile and Sacramento reconditioned starters. Generators were reworked at Sacramento,



The Douglas C-54 Skymaster was the backbone of the Berlin Airlift. (Official Air Force Photo)

Ogden, Oklahoma City and Mobile, and propellers were overhauled and reworked at Sacramento, San Antonio and Warner Robins. San Antonio, Warner Robins and Sacramento overhauled communications equipment and all of the depots repaired instruments.²⁶

The C-54s had to return to the United States periodically for cycle maintenance. Cycle maintenance involved a major inspection and reconditioning accomplished at 1,000-hour intervals. At 1,000 hours, for example, personnel conducted a basic inspection of the airframe and systems. The 2,000-hour inspection repeated the basic inspection but included flaps, corrosion prevention and tightening all bolts. At 3,000 hours, personnel repeated the basic inspection and added reconditioning of valves and integral tank sealing. The 1,000-hour cycles continued through 8,000 hours, with changes in the components and systems addressed.²⁷

Early in August, the Air Force made about \$11 million available to Air Materiel Command for contracts to civilian maintenance firms for cycle reconditioning of all C-54s assigned to the airlift, except the Navy R5Ds. The contracts went to three civilian firms, Texas Engineering & Manufacturing Company in Dallas, Texas; Lockheed Aircraft Service Company in Burbank, California, and Sayville, New York; and Aircraft Engineering and Maintenance Corporation in Oakland, California. The first of these began operation around 20 August. Until then, the depot at Middletown accomplished the work. The Navy performed cycle maintenance on its transport aircraft at Moffett Naval Air Station near San Francisco, California. Two C-54s arrived at Middletown on 11 August and eight more were on hand by the 20th.²⁸

The airlift's initial plans, based on 126 aircraft, called for 22 to be in the pipeline for the 1,000-hour inspection and 15 for 200-hour inspections at any one time, and all would be carefully scheduled on a regular schedule. The plan worked for the most part, but in November it became apparent that aircraft which had completed their inspections were not being returned to Europe as scheduled. Inspections that had been expected to take an average of 22 days had actually averaged 57. Shortages of spare parts, changing requirements for installation of equipment and the generally poor condition of the aircraft were principal reasons for interruptions in the flow of aircraft through the inspection pipeline. Further, the shortage of aircrews also affected the return of aircraft. As of 8 October, for example, eight C-54s which had completed inspection were waiting for crews to fly them to Europe. The demands of the airlift precluded releasing crews for ferrying operations. As of 26 November, 67 C-54s had been sent to US depots, and only 18 returned. In the same time period, Skymasters on the airlift had flown 126,344 hours, meaning that 126 should have returned to the United States. Fifty C-54s had arrived in theater along with the 18 returned, so the airlift had not suffered significantly. But the situation was still a grave concern.²⁹

The depot maintenance system gradually caught up with the demand for 1,000-hour inspections. By early 1949, the arrival of additional mechanics and parts in Europe increased the number of aircraft on operational status, permitting a more efficient utilization of aircraft and the prompt release of those scheduled for return to the US. Tunner and his staff also brought the problem with delays in 1,000-hour inspections in the US to Secretary of the Air Force Stuart Symington's attention.

Symington focused high-level attention on the backlog. As a result, efficiency in processing the aircraft and accomplishing the repair work increased dramatically, while the training of additional pilots and aircrews ensured that the C-54s returned to Germany on schedule. These measures began showing results by mid-February, and by May the difficulties of attending 1,000-hour maintenance had been largely solved.³⁰

Aftermath and an Epitaph

Statistics on the Berlin Airlift vary from source to source. The official USAFE summary of the airlift, *Berlin Airlift: A USAFE Summary*, provides perhaps the most complete and accurate data available. According to that source, the Berlin Airlift delivered a total of 2,325,509.6 tons of cargo to Berlin. Of this amount, Operation Vittles delivered a total of 1,783,572.7 tons, while Operation Plainfare delivered 541,936.9 tons. US deliveries included 1,421,118.8 of coal, 296,319.3 tons of food and 66,134 tons of miscellaneous cargo. British deliveries included 164,910.5 tons of coal, 240.386 tons of food and 136,640.4 tons of miscellaneous cargo. Among other commodities, the miscellaneous category included 92,282 tons of liquid fuels, mostly delivered by British civilian aircraft operating under contract. British civilian aircraft also delivered 146,980 tons of the cargo included in the British statistics. In terms of percentages, the US Air Force contributed 76.7 percent of the total tonnage, the Royal Air Force transported 17 percent, and the British civil airlift made up the difference with 6.3 percent.

In addition to the cargo flown into the city, the CALTF transported 81,730.8 tons of cargo out of Berlin during the airlift. Of this freight, 45,887.7 tons went in US aircraft while the British flew out 35,843.1 tons. Much of the outbound cargo comprised small manufactured items produced by Berlin industry under incredibly difficult conditions and labeled "Hergestellt im Blockierten Berlin" ("Manufactured in Blockaded Berlin"). The airlift also carried a total of 227,655 military and civilian passengers in and out of the beleaguered city.

The total number of flights made by the airlift also varies somewhat from source to source. The USAFE summary concluded that the total was 277,569 flights, 189,963 flown by the US Air Force and 87,606 by the Royal Air Force. The total number of flights certified the intensity of the Berlin Airlift and the efficiency with which it operated.

The Berlin Crisis of 1948 was the West's first great victory of the Cold War and it had profound consequences. The Berlin blockade proved a disaster for Joseph Stalin and his foreign policies by providing graphic evidence of Soviet ruthlessness and inhumanity. Frightened by Soviet cynicism and brutality, Western Europe took a long close look at the "red menace" and turned to each other and the US for protection. Soviet policies drove these nations to seek safety within a unified defense system and the Berlin Crisis, thus, led directly to the creation of the North Atlantic Treaty Organization. Further, Soviet threats and pressure failed to prevent the establishment of a free and independent West Germany, and, in fact, accelerated the process. By mid-1949, the West Germans adopted a democratic constitution, proclaimed the Federal Republic of Germany and elected a free parliament.

For the US Air Force, the Berlin Airlift demonstrated the need to throw off the "milk-run" mentality of the airlines and earlier military air transport operations. Modern airlift required

professional organization and exceptional precision in all aspects of transportation, communications, maintenance, contracting and supply. Above all, the airlift validated the need for large transports designed specifically for use as military transpor. The Lockheed C-130 Hercules, Lockheed C-141 Starlifter, Lockheed C-5 Galaxy and McDonnell Douglas C-17 Globemaster III of today's Air Force are the direct descendants of the C-47s and C-54s of the Berlin Airlift and the lessons learned during that great endeavor.

The most appropriate epitaph for the Berlin Airlift flew into Berlin by airplane. On 23 September 1949, an RAF C-47 Dakota landed at Gatow. On its nose, were the words: "Psalm 21, verse 11."³¹ For those who knew their Bible, or those who took the time to look, the message with its reference to Stalin's blockade proclaimed victory:

For they intended evil against thee: They imagined a mischievous device, which they are not able to perform.

Notes

1. Except where noted, the following narrative is based upon Roger G. Miller, *To Save a City: The Berlin Airlift, 1948-1949* (Washington, DC: Air Force History and Museums Program, 1998).
2. Frank Howley, *Berlin Command* (New York: Putnam, 1950), 204-205.
3. William H. Tunner, *Over the Hump* (New York: Duell, Sloan, and Pearce, 1964. New Imprint. Washington, DC: Office of Air Force History), 174-75.
4. *Ibid.*, 174.
5. Harrington, Daniel F., "Against All Odds," *American History Illustrated*, (Feb 82), 32.
6. Hist, "USAFE and the Berlin Airlift, 1948: Supply and Operational Aspects," (HQ USAFE, 1 Apr 49), 90-91, Box 809, Germany 381, Sec 5 to Sec 7, RG 341, National Archives (NA).
7. Ltr, LeMay to Fairchild, 22 Jun 48, atch to SSS, Major General F.H. Smith, Jr., Asst for Programming, DCS/O, HQ USAFE, nd, General Correspondence File, 17 May 48-31 Jul 48, Box 1. Muir S. Fairchild Papers, Library of Congress; Hist, "USAFE and the Berlin Airlift, 1948," 166.
8. Hist, "USAFE and the Berlin Airlift, 1948," 121-23.
9. *Ibid.*, 121-23.
10. USAFE Letter 65-60, subj: Supply and Maintenance Procedures for Air Lift Task Force (Prov), 19 Aug 48, atch. to Hist, "USAFE and the Berlin Airlift, 1948."

11. Hist, "USAFE and the Berlin Airlift, 1948," 111-12, 115.
12. *A Special Study of Operation Vittles* (Air Force Operations Magazine, Apr 49), 75-76; *Berlin Airlift: A USAFE Summary, 26 June 1948-30 September 1949* (HQ USAFE), 94-95.
13. Hist, "USAFE and the Berlin Airlift, 1948," 93-95.
14. *A Special Study of Operation Vittles*, 78.
15. *Berlin Airlift: A USAFE Study*, 95.
16. *Ibid.*, 95.
17. *A Special Study of Operation Vittles*, 78-81.
18. *Ibid.*
19. Ltr, Major General William H. Tunner, Cmdr, Airlift Task Force (Prov), to Major General Laurence S. Kuter, Cmdr, MATS, 3 Aug 48, Berlin Airlift Files, History Office, Air Mobility Command.
20. Hist, "USAFE and the Berlin Airlift, 1948," 50-51, 63, 96-100; *A Special Study of Operation Vittles*, 86-88.
21. Hist, "USAFE and the Berlin Airlift, 1948," 96-100.
22. *Ibid.*, 100-102.
23. Memo, Major General R.C. Lindsay, Deputy Director, Plans & Operations, subj: US Military Courses of Action with Respect to the Situation in Berlin, Aug 48, Box 177 "381 (8-20-43) Sec 17-19," Central Decimal File, 1948-50, RG 218, NA; Art, "200 Hour Maintenance—Burtonwood," *Task Force Times*, 8 Dec 48; *A Special Study of Operation Vittles*, 88.
24. *Berlin Airlift: A USAFE Summary*, 34.
25. *Ibid.*, 94; Hist, "USAFE and the Berlin Airlift, 1948," 100-102.
26. *A Special Study of Operation Vittles*, 98-100.
27. *Ibid.*, 101.
28. Ltr, Major General Laurence S. Kuter, Commander, MATS, to Major General William H. Tunner, 13 Aug 48, Berlin Airlift Files, History Office, Air Mobility Command; Rpt, subj: Summary of Operation "Vittles," 15 Dec 48, atch to Memo for Mr. Symington, subj: Status of Implementation of the NSC Recommendations for Augmenting the Berlin Airlift, 16 Dec 48, w/atch, Box 808 "Germany 381. Sec 2 to Sec 4," AF Plans-Project Decimal File, 1942-54, RG 341, NA.
29. Rpt, subj: Summary of Operation "Vittles," 15 Dec 48, atch to Memo for Mr. Symington, subj: Status of Implementation of the NSC Recommendations for Augmenting the Berlin Airlift, 16 Dec 48, w/atch, Box 808 "Germany 381. Sec 2 to Sec 4," AF Plans-Project Decimal File, 1942-54, RG 341, NA; Hist, "USAFE and the Berlin Airlift, 1948," 137-41.
30. Hist, "USAFE and the Berlin Airlift, 1948," 88-90.
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Have You Thought About—

The history of war proves that nine out of ten times an army has been destroyed because its supply lines have been cut off We shall land at Inchon, and I shall crush them.

Douglas MacArthur

'That's the reason they're called lessons' the Gryphon remarked: 'because they lessen from day to day.'

Lewis Carroll, *Alice's Adventures in Wonderland*

Mobility is the true test of a supply system.

Captain Sir Basil Liddell Hart, *Thoughts on War*