1

COMBAT TO OCCUPATION

The Army engineers attached to U.S. forces in Europe faced gargantuan tasks in 1945, and their work was rendered dramatically more complex by the extent of the destruction that Europe had suffered. During the last months of the war, retreating Germans had devastated northern France and Belgium from the coast of Normandy to the German border. In Holland, broken dikes allowed major sections of the land to flood. In Italy, traditional centers of the country's economic strength, Milan and Turin, lay paralyzed. In Central Europe, business and residential communities had given way to barren landscapes, piles of debris, craters from bombs, stinking heaps of rubble, and ruins. Throughout Germany, a large portion of civilian housing was uninhabitable. Eighty-one percent of all lodging units in the U.S. zone were either destroyed or severely damaged. In Frankfurt, the city that the Americans chose for the headquarters of their postwar military command, only 44,000 of 177,000 residences remained standing.[1]

Famine was a stark reality throughout Europe. The war had eroded the farm economy and had destroyed machinery, fertilizers, and seed; breeding livestock had been killed. After 1945 production of food grain in France was less than half what it had been before the war. Food rationing was absolutely necessary throughout Europe. An estimated 100 million Europeans existed at a level of 1,500 or fewer calories a day, a diet inadequate to support heavy work or sustain growing children. Even that level of nutrition proved impossible to maintain. In 1946 authorities in both the British and American zones of occupation in Germany had to cut rations to 1,000 calories a day, a level of consumption that the British commander in chief, Field Marshal Bernard Viscount Montgomery, described as equivalent to slow starvation.[2] Clothing and shoes were as scarce as food; tools and domestic amenities were nonexistent.

Throughout much of Europe, the transportation system had ceased to operate. France's stock of locomotives was at 35 percent of prewar numbers. In the American and British zones of Germany, 740 out of 958 important bridges had been destroyed. The debris of war clogged inland waterways and ports, making them unusable.

War Destruction in Munich

The theater chief engineer in Europe, Maj. Gen. Cecil R. Moore, exercised staff responsibility for advising the American theater commander, General Dwight D. Eisenhower, on all engineering matters and for establishing the basic plans and policies for the Army engineers. In practice, Moore served as a part of the staff of Lt. Gen. John C. H. Lee, commander of the Communications Zone (COMZ), the European Theater's rear area command.[3] Headquartered first in England and then in Paris after its liberation, COMZ managed the flow of supplies and support services to the combat forces at the front and, after hostilities ended, to the occupation forces in the American sector of Germany.[4]

As it advanced, the U.S. Army set up ad hoc civil affairs units of military government in the German communities. Their main task was to ensure the security of the armed forces on the move. Without any viable indigenous government in place, the conquering troops assumed powers far beyond the conventional responsibility to maintain law and order. The Army inherited by default the responsibility to house and feed the population and to rebuild the German economic, social, and political structures needed to sustain civilized life in the postwar era.

During the final phase of the war, Moore's office provided technical support to combat forces. Command of engineer units—officers and men—remained in the hands of the field commanders in the combat zone, where the action was, or with COMZ section commanders in charge of the liberated areas. These commanders exercised considerable freedom in the field in the use of their engineer troops and resources.[5] When the war ended, the

Destroyed Railway and Highway Bridge over the Rhine River in Cologne, 18 May 1945

Army engineer organization at COMZ headquarters continued to provide technical support for all military operations within the European Theater. Command of engineer troops remained with the field commanders.

Organizing the Occupation

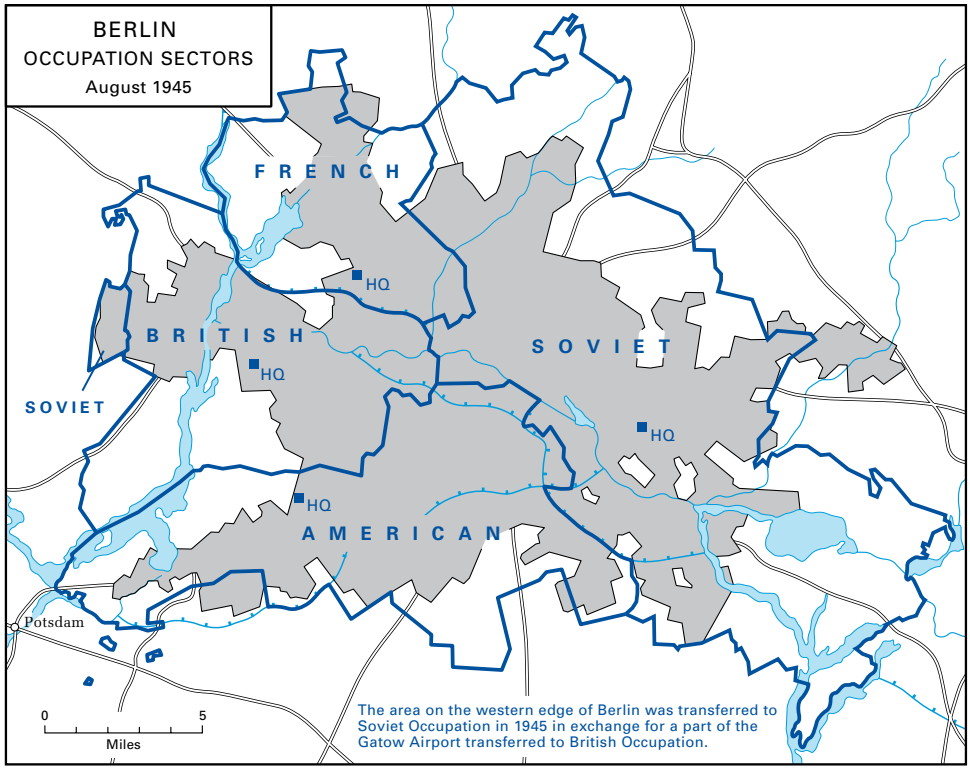
In the summer of 1945 the U.S. Army settled in Germany in the role of occupying power. On 5 June the commanders in chief of coalition forces in the European Theater met in Berlin and issued a joint statement on "Arrangements for Control of Germany." The Soviet Union, Great Britain, the United States, and France declared that German centralized government had ceased to exist and that all governing authority rested with them. They divided Germany into four zones of occupation (*see Map 1*) and established the Allied Control Council in which the commanders of the four occupying armies acted for Germany as a whole. Decisions of the Allied Control Council had to be reached by unanimous consent. Within his own zone each commander exercised complete authority. Berlin was similarly divided into four sectors (*see Map 2*), with its own citywide administration, the *Kommandatura*, composed of the four sector commanders. Under the terms of the surrender, the Germans were to bear the total costs of the occupation.

The U.S. zone of occupation in Germany encompassed the southwestern states (*Länder*) of Bavaria, Württemberg-Baden, and Hesse; the northern ports of Bremen and Bremerhaven; and the southwestern sector of

ZONES OF OCCUPATION
GERMANY
August 1945
Zone Boundary
0
150 Miles
0
150 Kilometers
D E N M A R K
JOINT
AMERICAN-BRITISH
Bremerhaven
Hamburg
UNITED
KINGDOM
ENGLISH CHANNEL
AMSTERDAM
The Hague
NETHERLANDS
Hannover
B R I T I S H
Rhine R
Kassel
BRUSSELS
B E L G I U M
Cologne
Erfurt
Meuse R
Frankfurt
LUXEMBOURG
Mosel R
Luxembourg
Kaiserslautern
Heidelberg
Nuremberg
Marne R
PARIS
Metz
A M E R I C A
Seine R
Stuttgart
Danube R
F R A N C E
Loire R
Mulhouse
Dijon
S W I T Z E R L A N D

Map 1

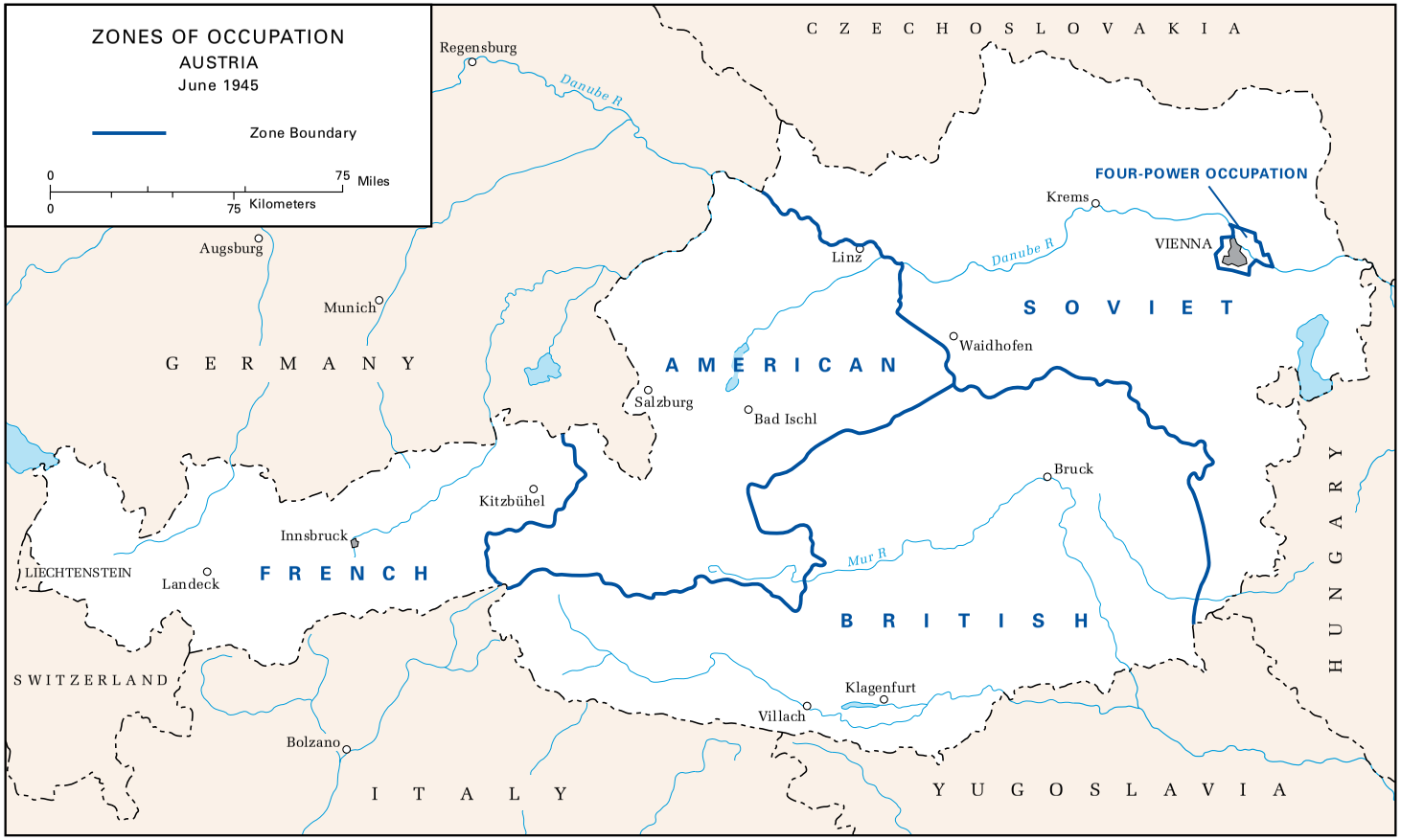
SWEDEN
BALTIC SEA
LITHUANIA
SOVIET
EAST PRUSSIA
Stettin
UNDER
POLISH
ADMINISTRATION
UR-POWER OCCUPATION
BERLIN
WARSAW
Elbe R
POLAND
OVIET
Leipzig
Dresden
Breslau
Oder R
PRAGUE
Pilsen
CZECHOSLOVAKIA
N
VIENNA
Danube R
nich
BUDAPEST
AUSTRIA
HUNGARY



Map 2

Berlin. The U.S. zone covered about 47,000 square miles, roughly the size of the state of Mississippi; it contained few industrial resources and only two major cities—Frankfurt and Munich. One-fourth of the land was arable, one-fourth was mountains and forest, and the remainder was pasture or swamp land. In July 1945 the zone contained about 19 million people, including many refugees from Eastern Europe.[6]

Austria presented an anomaly for the occupying powers. Annexed by the German Reich in 1938, it had fought the war as part of Nazi Germany. Upon defeat it was occupied and, like Germany, divided into four zones. Arguably, Austria was not a defeated enemy state but a victim of Nazi aggression. On the other hand, it was not a liberated state either. Its peculiar situation marked it for special treatment. After Germany's surrender, the four occupying powers quickly turned political and economic authority over to the Austrians, who formed an indigenous central government in Vienna. All four powers retained a military presence both in Vienna—wholly within the Soviet zone and divided like Berlin—and in their four zones. (*Map 3*) In June 1946, when the occupying powers recognized the Austrian government, the Allied military government—but not the four-power occupation—ended.


ZONES OF OCCUPATION
AUSTRIA
June 1945
Zone Boundary
0
75 Miles
0
75 Kilometers
C Z E C H O S L O V A K I A
Regensburg
Danube R
FOUR-POWER OCCUPATION
Krems
VIENNA
Linz
Danube R
S O V I E T
Waidhofen
Augsburg
Munich
G E R M A N Y
A M E R I C A N
Salzburg
Bad Ischl
Bruck
Kitzbühel
Innsbruck
LIECHTENSTEIN
Landeck
F R E N C H
Mur R
B R I T I S H
H U N G A R Y
S W I T Z E R L A N D
Klagenfurt
Villach
Bolzano
I T A L Y
Y U G O S L A V I A

Map 3

Army Engineers in the U.S. Zone

On 1 July 1945, Eisenhower reorganized his forces in Europe and established a new command, United States Forces, European Theater (USFET), with its headquarters in the I. G. Farben Company building in Frankfurt.[7] For a brief time Supreme Headquarters, Allied Expeditionary Force (SHAEF), the headquarters of the retiring wartime command, the European Theater of Operations, United States Army (ETOUSA), and its subordinate command, COMZ, all coexisted with USFET; by 1 August SHAEF and ETOUSA had been inactivated. General Eisenhower left Europe on 11 November 1945; on 26 November General Joseph T. McNarney took command of USFET and the military government of Germany. The Army had begun to move support services provided by COMZ from France into occupied Germany. It redesignated the support command as the Theater Services Forces, European Theater (TSFET), with a main headquarters in Frankfurt and a rear headquarters in Paris. In Germany, American military personnel were dispersed over the entire U.S. zone, often in small, isolated units.[8]

As the U.S. Army shifted its headquarters staff to Frankfurt, a new center of engineer activities developed there. Over the summer General Lee, the commander of COMZ and its successor, TSFET, assigned key personnel to Frankfurt while maintaining logistical and redeployment activities at Headquarters (Rear) in Paris.[9] Lee decided to divide his staff. He retained General Moore in Paris as theater chief engineer; but he sent Moore's deputy, Col. John R. Hardin, and Moore's chief of construction, Col. Paul D. Berrigan, to Frankfurt, where they worked under Lee's chief of staff, Maj. Gen. Carter B. Magruder.[10] The new structure perpetuated Moore's dual role as technical adviser to both the theater commander and the commanding general of the Theater Services Forces; this duality existed until TSFET was inactivated in February 1946. By March 1946 all engineer planning and coordination functions were consolidated in Frankfurt as a part of Headquarters, USFET.[11]

In Germany and Austria, the U.S. Army engineers had a wide range of tasks. The occupying army units needed liquid fuels and petroleum products, so Army engineers continued to operate the pipelines, pumping stations, and storage facilities that they had constructed to support the conquest of Germany.[12] To support the soldiers who remained in Europe, the Army engineers had to build and maintain barracks, hospitals, airfields, and the attendant infrastructure. For the Army to exercise its control over the population, transportation lines choked by the destruction of war had to be cleared. Roads, railways, canals, bridges, rivers, and ports all demanded attention from the engineers, as did mine fields and obstructions.[13]

In accomplishing their many tasks, the Army engineers operated under two related but separate command structures. Engineer troops remained under Army field commands and operated in support of the occupying army units dispersed throughout the American zones in both

Germany and Austria. The theater chief engineer, who served on the USFET general staff, supervised area engineer officers assigned to the military districts and subdivisions of the U.S. zones. These area engineers acted as field agents to execute operations prescribed by the theater chief engineer but remained under the authority of the local commander of the military district in which they served. The structure resembled the division and district structure maintained by the Corps of Engineers in the United States, except that it existed in what had been a combat theater where Army field commanders retained overriding authority. The Army engineers in the theater were commanded neither by the chief of engineers in Washington nor by the theater chief engineer. The theater chief engineer served under the authority of the commander of USFET, not the chief of engineers in Washington. The traditional primacy of combat field commanders carried over into the period of occupation in ways that complicated the theater chief engineer's mission.[14]

The dual structure of command under which the engineers operated had a parallel in the two interdependent but separate missions faced by the occupying army—civil administration of Germany and military command of the occupying troops. As a means of separating civil administration from issues of troop command and other military concerns, the U.S. Army transferred administration of its occupied territory from the hands of the tactical commanders, who had directed the invasion, to the Office of Military Government United States (OMGUS). On 1 October 1945, OMGUS became the official executive authority for American military government in Germany. Headquartered in Berlin, OMGUS created local offices in the three German states in the U.S. zone. Essentially in place by the end of 1945, OMGUS retained its authority in Germany until 1949.[15] OMGUS handled civil administration, whereas USFET and its successors exercised command authority over military affairs and over the troops organized into military districts and military posts throughout the U.S. zone.[16]

United States Forces, Austria (USFA), established headquarters for the American zone in Salzburg on 10 August 1945 but remained dependent upon USFET headquarters in Frankfurt for supply and administration. For matters concerning civil governance and political issues, USFA's commander operated directly under the command of the Joint Chiefs of Staff in Washington.[17] Once the postwar division of Austria was in place in 1945, the U.S. Army planned to reduce its presence to a minimum within ninety days and to provide a military government that could support and encourage Austrian political and economic recovery. In keeping with these objectives, the USFA engineer's tasks in 1945–1946 were to reduce and reorganize personnel, to dispose of excess property, and to conduct necessary rehabilitation and very limited construction using troop labor.[18]

By July 1947 USFA abandoned the practice of charging costs to Austria as a burden of the occupation. The USFA staff engineer's office had contracting experience, so the commander designated the engineers to convert all real estate occupied by the Army to lease arrangements; to close rail service contracts; and to institute new systems for procurement, cost

accounting, and budget preparation. During a single month of transition in 1947, the engineers managed a team of personnel from all services that transferred 2,000 properties being used by American personnel from requisition status to lease arrangements.[19]

The Office of the Theater Chief Engineer

As administration of the occupation became the dominant mission for the U.S. Army, the need for coordination and overall planning superseded the need for immediate decision and quick execution that had prevailed in the immediate aftermath of Germany's surrender. To meet this change, the Army reorganized engineer resources. Throughout the balance of the 1940s, the chief engineer in Europe and his staff acted as the headquarters instrument, if not always the master, of activity for the engineers.

Throughout 1945 and early 1946 the Office of the Chief Engineer, USFET, contained seven divisions: control, administration, intelligence, troops, supply, construction, and real estate.[20] The theater chief engineer continued to support the Army's military mission in Europe, including support to the Army Air Forces. He advised the theater commander concerning engineering needs, established basic engineer plans and policies, and supervised the engineer activities in the European Theater. His authority was limited in practice, however, by the structure of command in the theater. In 1945 USFET had nine subordinate commands: Third Army; Seventh Army; the Bremen Port Command; United States Forces, Austria; the Western and Continental Base Sections; the Berlin District; U.S. Air Forces in Europe; and the Office of Military Government United States. A general officer headed each of these commands, and an engineer officer served on each of the general staffs. This decentralized structure, coupled with the recent combat experiences in which field commanders operated with a great deal of autonomy, created difficulties for General Moore as he sought to plan, coordinate, and supervise overall engineer activities throughout the theater.[21]

By the end of 1945 OMGUS had taken over authority for construction related to waterways, railways, highways, and bridges. OMGUS turned to the Office of the Chief Engineer, USFET, only when it needed to supplement its own resources.[22] Still, as the headquarters engineer for USFET, the theater chief engineer retained a full agenda. His office supervised acquisition of real estate, construction and maintenance of all military structures not otherwise assigned, establishment of building standards, and allocation of building materials among major commands. He reviewed all building projects. He was also in charge of maintaining the water supply and other utilities, as well as surveying and mapping. He ran the procurement system for the theater and was in charge of the disposition, storage, and security of supplies within the theater, including captured enemy materiel. Finally, he was responsible for fire fighting, camouflage, and the training of U.S. forces in Europe.[23] This profile of activities remained essentially the same through the decade.[24]

Most of the responsibilities of the Office of the Chief Engineer, USFET, involved planning, administration, and supervision. The office played a managerial and professional role in preparing architectural and engineering plans and in supervising their preparation by architect-engineer firms. Contractors, generally hired by subordinate levels of command under USFET, frequently executed construction and other tasks involving physical labor.[25]

To supplement the cadre of officers and professional specialists on the staffs of the Army engineers, the chief engineer's office sought to train military personnel in engineering skills. After the liberation of France the Army established the Engineer Training Center (later called the Engineer School) in Epernay. In 1946 the Army moved the school to Butzbach, Germany (north of Frankfurt), and then in early 1947 to Murnau, near Oberammergau in southern Bavaria. The training suffered markedly from the demobilization of skilled personnel; the school needed qualified instructors, but requests for occupational specialists in engineering from the United States yielded disappointing results. The chief engineer described the new instructors arriving in 1946 as "18-, 19- and 20-year old boys with no instructional ability and practically no technical background other than that obtained during a six-week course in a given subject."[26]

As the occupation lengthened, Moore and his successor sought to recover authority from the field and to consolidate it in the Office of the Chief Engineer at theater headquarters. They argued that a centralized staff could balance the competition between local, more parochial interests and the overall needs and responsibilities of the occupation forces. The change they sought came slowly. For most of the four-year period, central planning and coordination looked no more than one year ahead.[27]

Construction Personnel

Since the earliest days after the cross-Channel invasion, U.S. Army engineers faced labor shortages for any construction they undertook. The pool of civilian labor fell far short of the estimates made during planning for the rehabilitation of liberated and occupied areas. While still in France, General Moore's office received War Department authorization to recruit civilian laborers and set up an organization to supervise them as separate mobile units, using engineer labor procurement offices to recruit the needed personnel. As local governments in France stabilized, they provided both the recruitment and payment of some civilian labor. In addition to the civilians, 2,228 French engineer troops were organized in May and June 1945 into construction companies to assist the U.S. Army construction units.[28]

Employing prisoners of war (PW) helped alleviate the labor shortage in liberated areas and in the zones of occupation. In May 1945 prisoners of war working for the U.S. military numbered 54,223, many of them supervised by engineer troops.[29] Organized as 250-man companies, PW units relieved the shortage of troops for construction, depot operation, equip-

ment maintenance, and lumbering operations. These workers proved highly competent and eager to perform. Displaced persons also supplemented the labor pool that served the Army in 1945.[30]

The shortage of labor for the rehabilitation and construction programs remained a significant problem during the early years of the occupation.[31] In July 1945 the U.S. Army employed about 625,000 prisoners of war, displaced persons, civilians from Allied and neutral countries, and German civilians (local nationals in the Army's vocabulary), many of them supervised by engineer personnel.[32] By the first quarter of 1946 these sources of labor were declining because Army policy within the theater mandated the rapid reduction of the use of prisoners of war and displaced persons were repatriating. For the first quarter of 1946 the average number of German prisoners of war working on construction or rehabilitation for the U.S. Army remained about 60,000, although the engineers released more than 42,000 prisoners from labor service during this period. The German civilian labor force exceeded 25,000. By the third quarter of 1946 the PW labor force fell below 20,000; by February 1947 all PW labor had been eliminated.[33]

At the end of the war the military employed very few American civilians in Europe in either supervisory or professional positions; but as PW labor declined and military personnel left, the Army had to recruit civilians to supplement its workforce.[34] Restrictions on employment of Germans made it extremely difficult to attract qualified personnel. To overcome that, and to encourage stability in the workforce, the chief engineer's office recommended during the first year of the occupation that USFET provide more liberal allowances in clothing, food, and housing for German civilian employees working for the U.S. forces. While the number of prisoners of war dropped under 20,000 by the third quarter of 1946, the German civilian labor force rose to over 35,000, in part because the Army immediately rehired as many as 55 percent of the released prisoners as civilian workers.

The turnover of military personnel brought particularly negative consequences to financial record keeping where attention to detail and vigorous accuracy were crucial. Employees did not stay long enough to benefit from any training, and accurate record keeping suffered as a result. The Office of the Chief Engineer, USFET, promulgated training guidelines, but these had little prospect of bringing about improved accuracy until the employment situation stabilized.[35]

Professional personnel were hardest to find. Occasionally, an engineer officer leaving military service chose to stay in Europe as a civilian employee. But the chief engineer's office could not depend for staffing only on military officers mustering out. To identify the positions where it needed civilian specialists and administrators, the office solicited personnel requests from the engineer offices of USFET's subordinate commands. It then forwarded the list to the Office of the Chief of Engineers in Washington, which recruited personnel in the United States. The recruitment program began in 1946, and by late that year 156 American civilians had signed on to serve with the engineers in the European Theater. By the first quarter of 1947 the number had increased to 380.[36]

On 1 July 1946, the civilian personnel serving the Army in Germany had numbered 375,466; one year later the figure had dropped to 278,479. By 1 July 1947, of all civilian employees of the U.S. Army in Europe, 71 percent were Germans, 17.3 percent were displaced persons, 4.3 percent were Austrians, and 3.6 percent were U.S. citizens.

The share of this civilian workforce employed by the Office of the Chief Engineer, USFET, was small. By late 1947 the chief engineer's office employed about 5,000 civilians of all nationalities—or under 2 percent of the 1 July total—working in its headquarters office and all its field agencies in the American zones in Germany and Austria.[37]

During this same period the availability of soldiers for engineer work continued to decline precipitously. In early 1946 the engineers could still muster over 45,000 troops for construction assignments, but by the final quarter of 1946 that number had fallen to 16,000. In the first quarter of 1947 troops available averaged 6,700; only 2,200 were available in the last quarter. Germans still contributed the greatest numbers to the Army engineer workforce, but their numbers dropped from 33,764 (excluding prisoners of war) to 15,500 over the same period.[38] To compensate for the losses, the Army organized displaced persons—third-country nationals—into labor service units, provided uniforms and equipment, and paid them in much the same manner as U.S. troops. The special labor service units continued to serve the American forces for decades.[39]

Priorities and Problems

After the German defeat the U.S. Army had to change the focus of its activities. For three years, Eisenhower observed in retrospect, the nation had mobilized all its energies "to push men and supply forward into the heart of Germany." Suddenly, in May 1945, "the entire machinery … had to be thrown into reverse."[40] Troops had to be pulled out of Europe and redeployed to the war against Japan or returned home to the United States. Units remaining in Europe had to shift their mission from combat to control and governance, to occupying and administering conquered enemy land. The troops needed to maintain law and order, disarm and demilitarize a population whom they feared might be belligerent, and organize the U.S. military government in the defeated states.[41]

In these circumstances the Army engineers faced three military imperatives. First, they had to handle redeployment of troops. Second, they had to open German ports on the North Sea to move supplies to the U.S. forces concentrated in southern Germany. A third mission arose out of necessity. Massive material destruction had brought civil society in Europe to near total collapse by the end of the war, and the U.S. Army engineers needed to marshal their personnel and equipment to revitalize national civilian infrastructures in both liberated and occupied countries. As theater chief engineer, General Moore in Frankfurt remained responsible for coordinating these engineering tasks.

Redeployment of Troops and Materiel

The greatest engineer effort in the first months after the war ended in Europe involved redeployment—reducing troop strength in Europe, shipping men and materiel to the Pacific, and readjusting the total combat force to allow the soldiers with the longest service in combat and with dependent children to return to the United States. Rotation home depended upon an elaborate point system that took into account length and nature of service. The War Department's plan called for reducing troops in Europe from 3,071,000 in May 1945 to about 405,000 by June 1946. This meant shipping out more men each month than the maximum number that had arrived in any one month during the war. Fifteen percent of the troops to be redeployed, with their equipment, were destined for the Asiatic-Pacific Theater.[42]

Relocating 2.6 million men in one year—the War Department's target number—was equivalent to moving the entire population of a city the size of Baltimore halfway around the globe. To accommodate transient troops, the engineers constructed holding camps near ports of embarkation to handle 250,000 people at a time. They also had to package and crate all the goods and equipment that accompanied the troops. Army engineers constructed camps at Rheims; near the French ports of Marseille, Le Havre, and Cherbourg; and near the Belgian port of Antwerp. Accommodations in these camps ranged from tents that provided a rudimentary bivouac level of shelter to more solid, wooden-sided tents designed for the winters of northern Europe.[43]

Constructing the camps and the packing crates necessary to move belongings and equipment required enormous quantities of lumber. In the spring of 1945 General Moore's staff calculated an immediate and imperative need for about 95 million board feet. Much of this was available as sawn lumber in the U.S. zone in Germany. In June Moore's engineers in Frankfurt began to set monthly production targets for the German forestry organizations that handled the logging and milling of lumber. Moore estimated that by July the Germans could produce about 35 million board feet a month. To move that much lumber by rail required about 350 railroad cars a day, straining the capacity of a rail system already worn down by the war. Moving anything by truck meant seeking help from field armies that had the very few trucks available; field commanders were disinclined to part with any of them.[44]

The availability of lumber for crating and packaging remained a major concern throughout the summer of 1945. Although the Army turned to Switzerland, Sweden, Norway, Finland, and Russia to supplement supplies, most of the lumber came from Germany. The German lumber that reached the engineers arrived unsorted and unclassified, making delivery of the proper stock to the appropriate locations much more difficult. When ordering boxes and crates, the engineers had to spread the contracts among small producers. The wide dispersion of these producers caused serious problems in the distribution of lumber, nails (also in short sup-

ply), and hardware and complicated getting the finished products where needed. Despite the myriad of problems, supplies had become sufficiently regular by early autumn 1945 to keep up with the demand for shipping crates and boxes.[45]

The engineers had orders to prepare redeployment camp facilities for 294,000 troops in the assembly area for debarkation. By 1 July, just seven weeks after the end of the war, they had constructed space for 287,125. By December 1945, as the flow of redeployment passed its peak, the engineers began to dismantle the camps, starting in France. This task continued until it was completed in October 1946.[46]

All this work had to be coordinated and accomplished even though the most experienced engineer personnel were simultaneously being redeployed. Within a week of the German surrender, General Moore began to see the severe impact on engineer units of the loss of key people. He complained that he would "lose 75 percent of our [engineer] troops in the Communications Zone within the first four months." Years later he recalled, "[I] reorganized my units every damn week because my units were decimated as the best men got their points to go home."[47] Moore wanted authority to determine which engineer officers and units would be demobilized, but the command structure gave that authority to the field commanders in Europe, who implemented the rotation system.[48]

Securing a New Line of Communications and Supply

Ensuring a secure supply line to transport materiel to the troops figured prominently among the tasks facing the occupying forces. After the successful breakout from Normandy in 1944, most of the supplies needed by the U.S. Army had flowed across France. After liberation, France's sensitivity concerning foreign military authority within its sovereign territory made this route unsuitable. The port of Bremerhaven became the port of entry and the northern end of a new line to bring supplies to the U.S. occupation forces in southern Germany.

To construct the new line of communications and supply, Army engineers had to clear the seaports and establish rail connections to the south. Clearing the Bremerhaven seaway began in April 1945, before the end of the war. The work included removing underwater mines from a point upstream (south) of Bremerhaven to the river port in Bremen, about thirty-five miles away. There the waterway also needed mine clearing and dredging. Fortunately, the rail yards in both port cities had suffered only light damage. On 28 June 1945, both Bremerhaven and Bremen opened and the first four American supply ships were unloaded. Preparations continued to ready the ports to receive forty ships within the next month.[49]

Theoretically, the military's formal responsibility toward the civilian population was limited to only what was necessary to attain its military objectives and to prevent widespread disease.[50] In reality, the devastation and paralysis in Germany made the Army totally responsible for the

Power Station in Germany

civilian population. When the war ended, the Army faced the prospect of housing and at least partially feeding 8 million people in Europe: U.S. troops and civilian personnel, recovered Allied military personnel, displaced persons in camps, and prisoners of war. More than 5 million of them were in the U.S. zones of occupation in Germany and Austria; U.S. troops made up 3 million.[51] In addition, the Army commanded the only structure capable of providing general relief, with goods drawn largely from theater stocks, to the rest of the civilian population in need.[52]

The occupying armies had no choice but to address the pervasive chaos and despair of civilian society. Normal economic activity had totally broken down in the last days of the war. Most shops were empty. In postwar Germany, it was impossible to find such commodities as fabric, soap, electric light bulbs, or window glass on the open market. Only the black market functioned, and on it the common medium of exchange was American cigarettes, which soldiers had in abundant supply. About a third of the meager production in Germany found its way onto the black market. Trading in the black market was a court-martial offense, but few soldiers could resist it. A lieutenant who made his entire cigarette allowance available on the black market could pocket $12,000 in four months, the equivalent of well over $100,000 in current values.[53]

The Army engineers encountered situations in which only the black market offered the goods necessary to carry out military assignments. Because the domestic economy in the United States strained to meet the shift to peacetime production, the engineers faced severe restrictions on

Mess Hall under Construction in Frankfurt, Germany, ca. 1945

what they could requisition from home. On occasion Col. Robert Fleming, who served in the Construction Division in General Moore's office from 1945 to 1947, received calls from Col. Howard A. Morris, the district engineer in Frankfurt, saying that he had exhausted all possibilities for supply. Only the black market had the supplies that he needed to complete his mission. Fleming recalled that he would reply, "Okay, I'll donate a carton of cigarettes." Neither man faced a court-martial; indeed, both retired as general officers.[54]

Rebuilding the Infrastructure

Many of the underlying problems presented engineering challenges. Transportation had to be restored; industry had to be restarted; and basic utilities such as water, sewers, and electricity had to be made operational again.

In Le Havre, Cherbourg, Marseille, and other French cities and villages, the Army engineers repaired the mains that distributed water within the cities. In Le Mans, Cherbourg, Saint Quentin, Rheims, and the Belgian cities of Liège and Namur, they chlorinated the water systems as well as cleansing them. They restored 155 miles of power lines in the Normandy peninsula and another 21 miles of lines west of Aachen, Germany. Military personnel completed 65 to 85 percent of construction tasks in the first months after the Normandy landing, but prisoners of war and civilians also provided labor as the armies moved across France and into Germany.[55]

Coal, the principal fuel for heating and power in Europe, was one of the resources essential for recovery. Even before hostilities ended, the engineers of the Advance Section (ADSEC) of COMZ received orders to take over the coalmines in the captured parts of Germany and to restore them to operation under U.S. military control to alleviate the critical shortage of coal. ADSEC engineers secured control of 177 mines in the Ruhr-Cologne-Aachen area between 1 April and 15 May 1945 and immediately began to mine and ship coal.[56]

Restoration of the German mines by the ADSEC engineers illustrates the wide range of interlocking engineering problems created by the destruction of war. First, the coalmines needed electrical power to operate. To meet this need, the ADSEC engineers restored an 110,000-volt power grid for the Ruhr and a generating plant near Cologne. These systems provided more than adequate power for the mines, leaving a surplus for transmission elsewhere, including into Frankfurt.[57]

Second, the Army engineers had to find a labor force to work the coalmines. The Nazi regime had used slave labor to provide about 40 percent of the wartime workforce in the mines. This labor source disappeared with the war's end. To recruit mine workers, the engineers had to provide food, clothing, and shelter, all elements in markedly short supply in the spring of 1945. In the absence of a diet that would support strenuous labor, the mines were chronically understaffed and worker productivity was low. ADSEC engineers described the problem clearly: "In order to obtain large-scale production, working and living conditions must be made attractive to the miner." The Army engineers wanted a diet of 3,500 calories a day for miners to sustain production.[58] If it had been approved (it was not), this diet would have given the miners three times the calories afforded to millions of other Europeans.

Third, the restoration of production and distribution of coal was hampered by the near paralysis of the rail, truck, and barge network. Had transportation been available to deliver essential supplies, such as timbers to shore up the mineshafts and galleries, effective production from the mines could have quadrupled in June 1945. In the Ruhr, where the level of production was about 5 percent of prewar quantities, that increase would have been dramatic! Even when newly reconstructed railroad lines became available, ADSEC engineers faced an "exceedingly acute" shortage of coal cars, which meant that coal could not move to the markets where it was needed.[59]

The Allies had to rebuild the transportation system that the war had disrupted and destroyed. Even as the troops advanced through Europe, engineers began to reconstruct railroad lines just behind the front. The Army repaired or rebuilt the equivalent of about 10,000 miles of single-track lines between June 1944 and May 1945. Nearly all of these had been turned back to civilian control by the time Germany surrendered. In occupied areas, the military retained control of railways, and reconstruction continued in the U.S. zone after the surrender. In the Stuttgart-Augsburg-Munich area, engineers started rebuilding the local electric rail system on

In April 1945 engineers worked on an important railway bridge that linked Germany and Belgium.

17 May, nine days after the German surrender. In less than two months trains were operating on the entire line. By January 1946, 96 percent of the rail lines in the American zone were operating again. German workers supplied most of the physical labor to rebuild and operate the railways. During the period immediately after American forces crossed the Rhine, the Germans were neither paid nor given food, but later the military government provided food for the laborers.[60]

Waterways constituted a vital part of the German transportation network. After the surrender, Army engineers assumed the tasks of clearing the Rhine for navigation and replacing the temporary bridges with more permanent structures.[61] River clearing began in May 1945 under the direction of the Construction Section of the Office of the Theater Chief Engineer.[62] Lt. Col. John Connally commanded the 1057th Engineer Port Construction and Repair Group that handled the actual work. To remove obstructions, engineers fabricated a floating crane mounted on a barge, providing a lift capacity of over 250 tons. By the end of June Connally's crews had completely removed only one of the twenty-six major obstructions between Koblenz and Karlsruhe and had begun work on thirteen others. A month later they opened a navigational channel through seven of the fourteen demolished bridges; by September the task was completed.[63] Connally's unit also worked to reconstruct bridges on the Rhine and the Main Rivers with the same barge and crane, using German prisoners as laborers. As of 1 January 1946, responsibility for inland waterways

in Germany passed from the Office of the Theater Chief Engineer to OMGUS. Army engineers completed work on the bridges across the Rhine and the Main in Mainz shortly thereafter.[64]

In the early months of the postwar era the Army engineers began the process of rebuilding Western Europe, especially defeated and devastated Germany. In the face of the pervasive destruction, economic collapse, hunger, and paralyzing despair that prevailed in 1945–1946, each engineering problem solved, each building rehabilitated, each roadway reconstructed or river cleared represented a major triumph. Beyond these discrete triumphs lay the larger task of supporting the U.S. Army in southwestern Germany for a duration that remained undefined.

The Soviets blockaded Berlin in 1948, which marked a significant change in the role of the U.S. forces in Germany. The supposedly provisional division of German territory took on a new character, one that reflected the tension growing between West and East in the Cold War conflict. The U.S. Army engineers stationed in Germany and throughout Europe adjusted their tasks and priorities accordingly.