BUILDING FOR PEACE

U.S. Army Engineers in Europe 1945–1991

Robert P. Grathwol
and
Donita M. Moorhus

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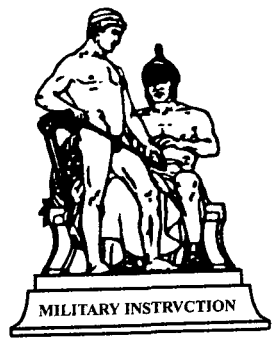
by
Robert P. Grathwol
Donita M. Moorhus



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FOREWORD

Most of the large wars between the end of World War II in 1945 and the collapse of the Soviet Union in 1991 were fought in Asia and the Middle East. Europe, where no war was fought, ironically was the epicenter of the Cold War. The stakes were highest there for both sides as two fundamentally opposed ideologies and political systems confronted each other across the so-called Iron Curtain. Both sides saw war in Europe as an Armageddon that could bring total victory or catastrophic defeat, and both sides focused and shaped their strategies and military forces to fight that war. By the time the Cold War ended in 1989 with the destruction of the Berlin Wall—the Iron Curtain incarnate—both sides had spent huge sums of money and devoted vast human resources to preparing for a war that never came.

A major fraction of the resources expended during the Cold War were devoted to the physical infrastructure that housed, trained, fed, armed, protected, and diverted the soldiers of the United States and the North Atlantic Treaty Organization (NATO) for almost half a century. The U.S. Army Corps of Engineers played a central role in building and maintaining that infrastructure. This history examines the engineers' work in detail, chronicling their design and construction activities in support of the U.S. and NATO forces that stood on the front lines of the Cold War.

Building for Peace tells the story of the often unglamorous but nevertheless critical missions of engineer officers and civilians and private contractors. It reflects the twists and turns of the Cold War's history and the effect these had on the engineering itself. Engineers, like their counterparts in other branches and services, worked tirelessly and often against great odds to defend the West.

CARL A. STROCK
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THE AUTHORS

In 1988 Robert P. Grathwol, Ph.D., and Donita Moorhus formed a partnership to conduct historical research and provide services in organizational development. They are coauthors of *Berlin and the American Military, A Cold War Chronicle* (1999); *American Forces in Berlin, Outpost of the Cold War, 1945–1994* (1994); and *Oral History and Postwar German-American Relations: Resources in the United States* (1997, with Douglas J. Wilson). They are also are coauthors of "Bricks, Sand, and Marble: U.S. Army Corps of Engineers Military Construction in the Mediterranean and Middle East, 1947–1991."

Grathwol has more than thirty years of experience as a professional historian and publishing scholar. He has worked extensively with archival documents in Europe, as well as in the National Archives, federal records centers, and the Library of Congress. He taught twentieth century European history at Washington State University, Johns Hopkins School of Advanced International Studies, Virginia Polytechnic Institute, and the University of Arkansas. Academic publications include *Stresemann and the DNVP* and numerous scholarly articles and book reviews in both English and German. Grathwol studied in France on a Fulbright Scholarship and spent two years as an Alexander von Humboldt Foundation Research Fellow in Germany. He holds a Diplôme Supérieur from the Centre des Hautes Études Européennes, Université de Strasbourg, and a Ph.D. from the University of Chicago.

Donita Moorhus is an oral historian, researcher, and writer. In addition to managing several historical research projects, she has written historical reports on the activities in Headquarters, U.S. Army Corps of Engineers, 1988–1992 and 1992–1996. For the U.S. Army Criminal Investigation Command (USACIDC), she was coauthor of the "Annual Historical Review, Fiscal Years 1991–1992," the "Annual Historical Review, Fiscal Years 1992 through 1995," and sole author of a "Historical Report of the Investigations of Sexual Misconduct in the Army, September 1996 through July 1997." Ms. Moorhus has interviewed senior officers of the U.S. military, civilians in government service, members of Congress, business leaders, foreign nationals, and journalists. She has an M.S. from Fordham University.

PREFACE

This book traces the activities of the American military engineers in Europe from the construction that began immediately after the end of the war in 1945, through the increase in construction necessitated by the buildup of American troops during the Cold War, to the dissolution of the Soviet Union in 1991. The book would not exist if not for the forethought of Maj. Gen. James W. "Bill" Ray, commander of the Europe Division of the Army Corps of Engineers in the mid-1980s, who set aside funds for a history of the division.

We began our research in 1988, and the timing could not have been more propitious. In that year the Europe Division expected to award between $650 and $700 million in contracts for design and construction. Before we completed the project, the Cold War had ended; two-thirds of U.S. forces had left Europe, some for the war to liberate Kuwait, some to return permanently to the United States; and American military construction in the region had shrunk to a small fraction of what it had been. Within a few short years the personnel, documents, and photographs that could tell the story of American military engineering in Europe were widely dispersed and the Europe Division had given way to a much smaller Europe District.

The story of the years between 1945 and 1991 has a straightforward outline. By mid-1945 the U.S. Army that had fought Nazism occupied the defeated German nation in cooperation with the three wartime Allies that had led the victorious coalition. The occupying army required engineering support to reconstruct even the minimum essential elements of the civic and economic structures necessary to conduct its business. The German government financed this construction as a part of reparation payments, providing for American military projects under American direction built by Germans and financed with German marks. Engineer activity was administered under the command structure of the U.S. Army of Occupation.

Within a few years, the occupying army's role changed. The Berlin Blockade of 1948–1949, the Korean War of 1950–1953, and the intensification of the Cold War between the Western allies and the Soviet Union turned the American military from occupier of a defeated Germany into a protective force contributing to a common European defense. By the mid-1950s the newly created Federal Republic of Germany became a valued ally in the North Atlantic Treaty Organization (NATO).

Military construction expanded with this changing role, and new engineering organizations were created to manage it. The Department of Defense formed the Joint Construction Agency (JCA) in 1953 to han-

dle military building in Europe, the Middle East, and North Africa for the Army, Air Force, and Navy. The U.S. Army Construction Agency, Germany (USACAG), took on a similar role starting in 1956 with U.S.-financed construction in the Federal Republic of Germany. Within a year, an organization similar to USACAG, the U.S. Army Construction Agency, France (USACAF), succeeded JCA to supervise U.S. military construction in France. In 1964 the Engineer Element replaced both USACAF and USACAG.

By 1966 the role of the U.S. military had evolved further and construction activities were consolidated in the Engineer Command under the commander in chief of the U.S. Army, Europe (USAREUR). For the first time in Europe, a single engineer officer commanded all the Army's European construction elements: troop construction, contract construction, and support to the military communities known as facilities engineering.

It was only in 1974 that engineering construction activities in Europe came directly under the Chief of Engineers in Washington, D.C. In July 1974 USAREUR disestablished the Engineer Command and redistributed its responsibilities. The contract construction function transferred to the U.S. Army Corps of Engineers, which established the European Division (EUD). With only a minor change of name, from European to Europe Division, this organization lasted until the end of the Cold War.

Over four years we pieced this story together from documents at the National Archives in Washington, D.C.; the Research Collections of the Corps of Engineers at the Humphreys Engineer Center in Alexandria, Virginia; the records-holding area of the Europe Division/District in Frankfurt, Germany; the U.S. Army Center of Military History in Washington, D.C.; the Europe Division's area offices in Germany and in Turkey; and other locations. We interviewed more than 125 active and retired military personnel, American civilians, and German and third-country nationals. The interviews, of which more than 100 were recorded and transcribed, were a particularly valuable source. They are located at the U.S. Army Corps of Engineers' Office of History Research Collections, Alexandria, Virginia.

We gratefully acknowledge that many people—civilian and military, in Germany, France, Belgium, the Netherlands, Austria, Turkey, and the United States—contributed to bringing the story of the Army engineers' service in Europe to these pages. We thank all the individuals who took the time to talk with us candidly about their experiences. Their memories and insights make this study more accurate and more interesting. We received professional support from dozens of librarians, archivists, and staff in offices and agencies in the United States and Europe. Our research in Europe was particularly aided by Anita Morsman, Linda Tompkins, Elaine Lawson, and Paul Nelson; but countless others helped us locate documents, schedule interviews, and arrange site visits. Elizabeth Miller and Douglas J. Wilson contributed intelligence and insight during the research and writing phases; Doug's assistance with photographs and

maps was invaluable. At a very early stage of the project, David Goldman helped with research at the National Archives. The initial drafts of the manuscript benefited from review by members of the Historical Committee of the Europe Division, U.S. Army Corps of Engineers.

Several people in the Office of History, Headquarters, U.S. Army Corps of Engineers, provided assistance and support. We are especially grateful to Dr. William C. Baldwin, who administered the contract. From our first day of research, he gave us encouragement laced with good advice and tempered by good humor. Dr. Martin Gordon facilitated our search for documents both in the Research Collections at the Humphreys Engineer Center and at the Washington National Records Center. Drs. Martin Reuss, Frank N. Schubert, and John Greenwood read versions of the manuscript and offered criticism. Patricia Taylor helped us reshape and improve the manuscript. The late Marilyn Hunter, as well as Jean Diaz, offered editorial guidance and suggestions.

Staff at the U.S. Army Center of Military History under the leadership of Keith R. Tidman and Beth MacKenzie guided the manuscript to publication. Diane M. Donovan carefully reviewed the text to assure consistency of style; she worked closely with Teresa Jameson, who designed the layout of the text, maps, and illustrations. S. L. Dowdy prepared the maps, and Glenn Schwegmann and Susan Carroll contributed their editorial talents.

We give special recognition and appreciation to General Ray, who made the decision to fund the initial contract for this study. Like General Ray, we hope the information we have gathered will allow others to appreciate the role that the Army engineers, civilian and military, played in Europe after World War II.

29 September 2005

ROBERT P. GRATHWOL
DONITA M. MOORHUS

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PART ONE

POSTWAR RECONSTRUCTION 1945–1949

INTRODUCTION

World War II changed world politics in ways that few people fully understood in 1945. By the end of that war, for the first time since the sixteenth century, European states were no longer the arbiters of the world's balance of power. Indeed, the destruction of German military and economic might created a vacuum of power in the center of Europe. Although Germany was occupied and governed by a coalition of powers that included Great Britain and France, its ultimate fate would be in the hands of the two extra-European powers that emerged from the war wielding unprecedented military force—the United States and the Soviet Union.

Over the course of the half-decade between 1945 and 1949, these two superpowers became locked in a struggle for world supremacy that dominated the next forty years. Europe was a theater of conflict and tension in that struggle—the West European states on one side as participants by assent in an alliance led by the United States and the East European states on the other, coerced into satellite status in a system dominated by the Soviet Union.

Between 1945 and 1948 the Grand Alliance that linked the United States and the Soviet Union during World War II came apart. In a speech in Fulton, Missouri, on 5 March 1946, former British Prime Minister Winston Churchill used the metaphor of an iron curtain descending across Europe from the Baltic to the Adriatic, behind which reigned oppression and disregard for individual freedom. In a book published late in 1947, the American journalist Walter Lippmann applied an equally memorable label—Cold War—to the struggle between the United States and the Soviet Union.

The United States assumed its new role as a world leader in this struggle only gradually. At the end of the war the country expected to demobilize its military and return to a normal, peacetime existence. By degrees, however, it took the initiative in overcoming the impasse concerning German economic recovery. In the eastern Mediterranean, where Western policymakers saw Communist insurrection threatening the government of Greece and Soviet pressure threatening the government of Turkey, the United States assumed responsibilities historically exercised by Britain. In March 1947 President Harry S. Truman asked Congress for $400 million in military and economic aid to help Greece and Turkey resist internal and external threats and remain "free peoples." In his address to Congress presenting the policy that became known as the Truman Doctrine, the president expressed a willingness to extend similar assistance to any nation that faced a comparable threat.

The Marshall Plan of 1947 represented another step on the United States' path to leadership. Outlined by Secretary of State George C. Marshall in June 1947, the plan offered American economic aid to European countries willing to cooperate in the economic reconstruction of Europe as a whole. The proposal represented an invitation to create a new alignment based on shared economic principles.

In Eastern Europe, Communist parties began as minority partners in putatively pluralistic coalitions but progressively took dictatorial control of governments—Poland in January 1947, Hungary in June, and Czechoslovakia in February and March 1948. Soviet intentions seemed increasingly more threatening. On 17 March 1948, France, Britain, and the three small countries of Belgium, the Netherlands, and Luxembourg signed the Brussels Pact, an agreement for their mutual defense. On the same day across the Atlantic in Washington, District of Columbia, President Truman sent a special message to Congress asking for authorization to reinstitute peacetime conscription for military service. The two events, taken together, marked the starting point for a regional security system linking Western Europe and North America. The Vandenberg Resolution, adopted in the U.S. Senate on 11 June 1948, affirmed American participation with West European states in a common military defense. It reinforced Truman's decision earlier in the spring to commit the American public to bear the burden of a standing army in peacetime. These individual steps confirmed a new direction in American foreign policy—resistance to and containment of the extension of Soviet power in Europe and around the globe.

The new policy received an immediate test in defeated Germany's historic capital city, Berlin. When the four powers divided Germany, the city of Berlin lay completely within the Soviet zone of occupation. Each of the four powers received a sector of occupation within the city and established a military presence. To gain access to the city from the rest of Germany, the Western allies had to cross territory controlled by the Soviets. The Soviets occasionally obstructed traffic over highways and rail routes through their zone into Berlin, but they agreed with the Western Powers for reasons of safety to establish unobstructed air passage through three designated air corridors. As tensions increased among the occupying powers over how to deal with defeated Germany—and with one another—the Soviet ability to isolate Berlin from overland communications became crucial. In 1948 the Soviet Union put Western resolve to the test when it blockaded land access to Berlin from the three Western sectors of Germany. Only through the air could the West gain access to Berlin without directly confronting the Red Army.

The clashes between the Western allies and the Soviet Union emerged slowly, and it was not the framework that conditioned military planning for the occupation of Germany in 1945 and for the reconstruction of Europe. The devastation of war and the collapse of society in Europe, rather than ideological conflict, drove the U.S. military to develop pragmatic solutions to immediate problems.

The war itself had challenged the technical ingenuity of the American military, and the U.S. Army Corps of Engineers had been an integral element in meeting the wartime challenges. The Army engineers had provided technical expertise to sustain the campaign to defeat Germany. The Office of the Chief of Engineers (OCE) in Washington provided knowledge, equipment, and supplies to the combat engineer units. Engineer troop units participated in the Allied invasions of North Africa, Italy, and northern France at the Normandy beaches, and in the occupation of a defeated Germany. Technical experts attached to OCE devised new solutions, plans, techniques, and equipment for the massive problems of logistics and combat in the war. When the war ended, the U.S. Army had 323,677 engineer troops on active military duty in the European Theater, almost 11 percent of total troop strength in Europe.[1]

In 1945 the retiring chief of engineers, Lt. Gen. Eugene Reybold, observed that "American engineering capacity was the one factor of American strength which our enemies most consistently underestimated. Without American construction talent we could not have won the war." Recognizing that the challenges of peacetime reconstruction would be equally great, General Reybold added, "it is doubtful that without all of America's construction talent we can win the peace."[2]

Reybold's remarks were both a fitting tribute to the past and a prophetic comment on the future. In May and June 1945 the engineers had to address the immediate needs of the U.S. Army as it changed its mission from combat to peacetime occupation. In addition, they had to help reconstruct civil society, especially in defeated Germany, so that the army could function as an occupying force. The Army engineers undertook these tasks in an environment as challenging as the war. Indeed, the theater chief engineer in Europe at the end of the war, Maj. Gen. Cecil R. Moore, reflected two decades later that his engineers had faced circumstances after May 1945 that were "far more trying than those arising during combat."[3]

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

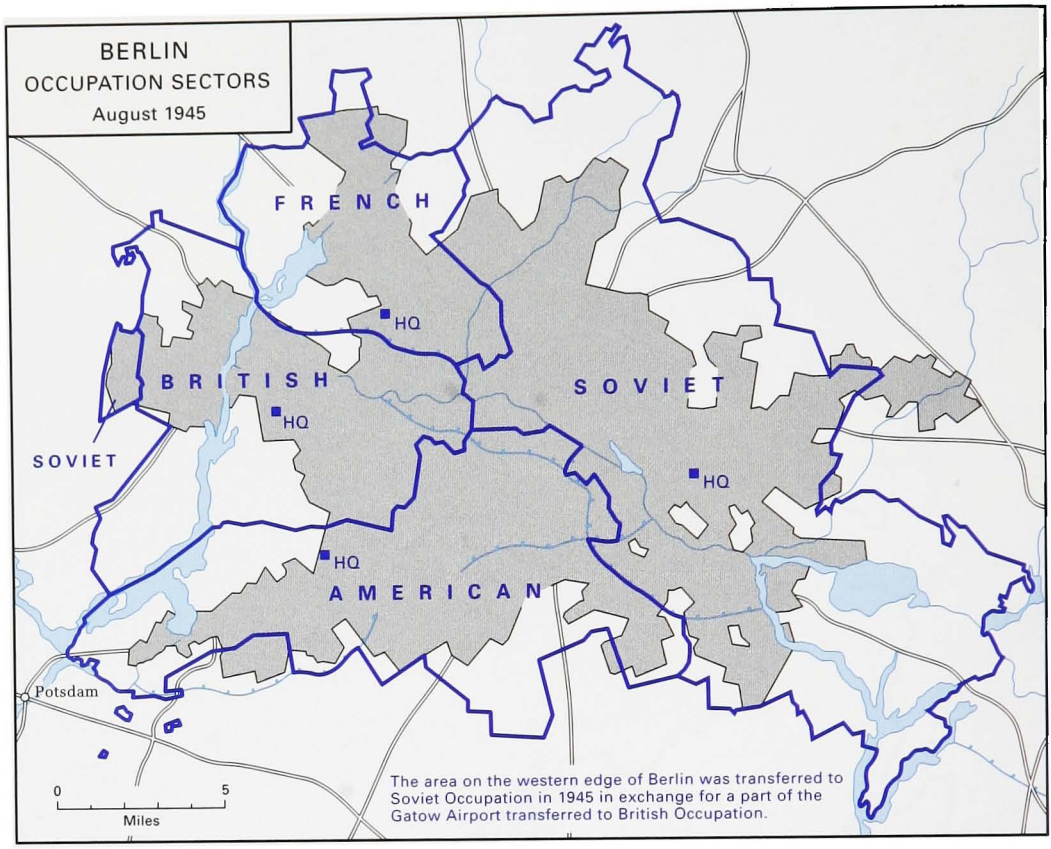
In the summer of 1945 the U.S. Army settled in Germany in the role of occupying power. On 5 June the commanders in chief of coalition forces in the European Theater met in Berlin and issued a joint statement on "Arrangements for Control of Germany." The Soviet Union, Great Britain, the United States, 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
Hamburg
Bremerhaven
UNITED
KINGDOM
ENGLISH CHANNEL
AMSTERDAM
The Hague
NETHERLANDS
Hannover
B R I T I S H
Rhine R
Kassel
BRUSSELS
BELGIUM
Cologne
Erfurt
Meuse R
Frankfurt
LUXEMBOURG
Mosel R
Luxembourg
Kaiserslautern
Heidelberg
Nuremberg
Marne R
PARIS
Metz
A M E R I C
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

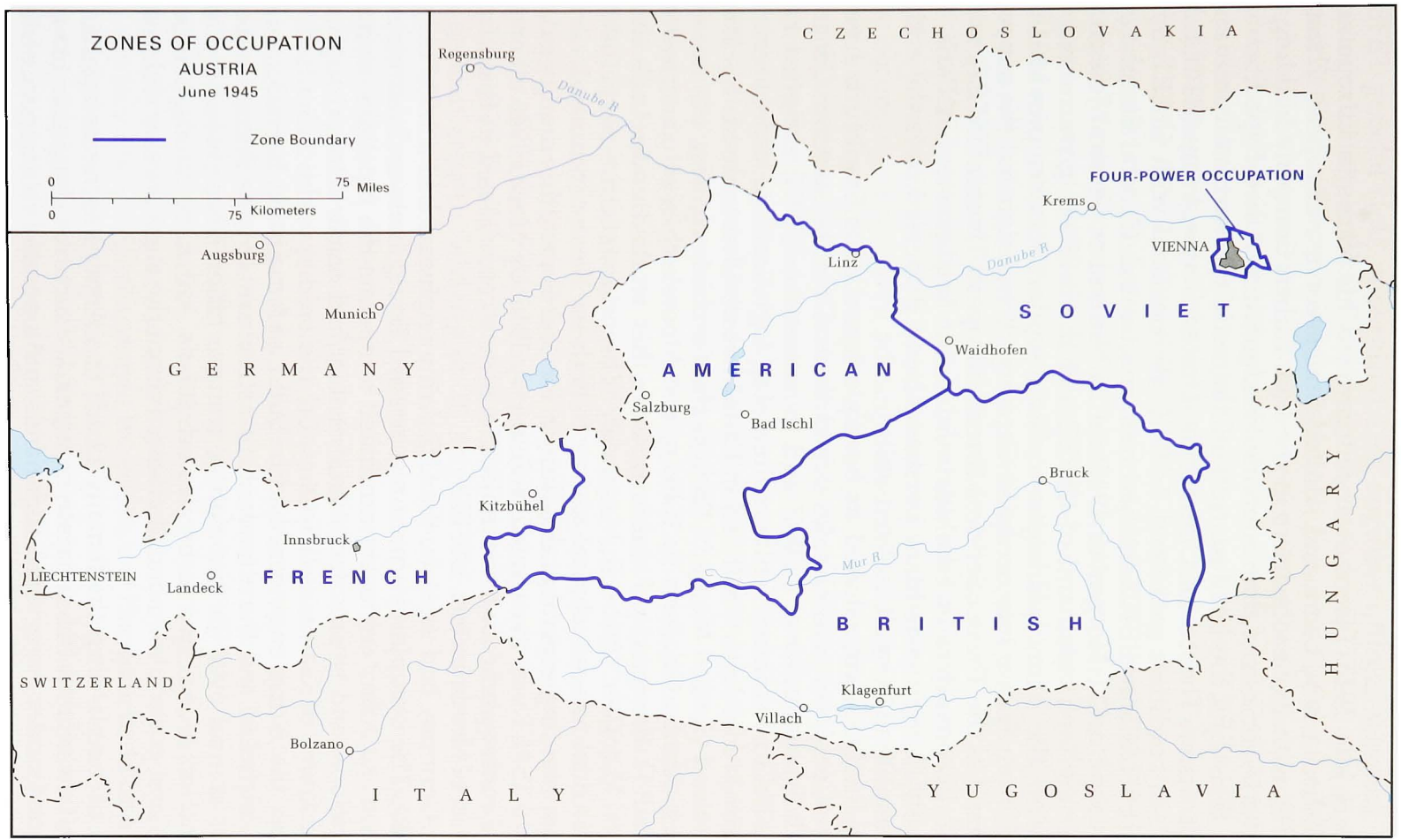
SWEDEN
LITHUANIA
BALTIC SEA
SOVIET
EAST PRUSSIA
Stettin
UNDER
POLISH
ADMINISTRATION
POWER OCCUPATION
BERLIN
WARSAW
POLAND
Elbe R.
VIET
Leipzig
Dresden
Breslau
Oder R.
PRAGUE
Pilsen
CZECHOSLOVAKIA
VIENNA
Danube R.
BUDAPEST
AUSTRIA
HUNGARY



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
CZECHOSLOVAKIA
Regensburg
Danube R.
FOUR-POWER OCCUPATION
Krems
VIENNA
Linz
Danube R.
Augsburg
Munich
SOVIET
GERMANY
AMERICAN
Waidhofen
Salzburg
Bad Ischl
Bruck
Kitzbühel
Innsbruck
LIECHTENSTEIN
Landeck
FRENCH
Mur R.
BRITISH
HUNGARY
SWITZERLAND
Klagenfurt
Villach
Bolzano
ITALY
YUGOSLAVIA

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]

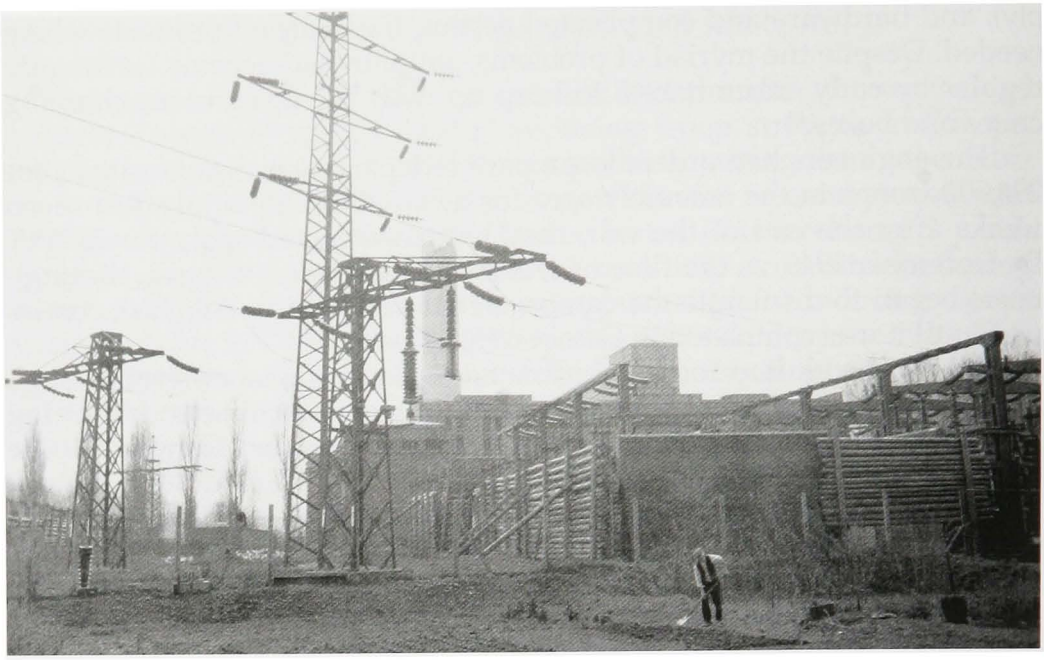
All this work had to be coordinated and accomplished even though the most experienced engineer personnel were simultaneously being redeployed. Within a week of the German surrender, General Moore began to see the severe impact on engineer units of the loss of key people. He complained that he would "lose 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

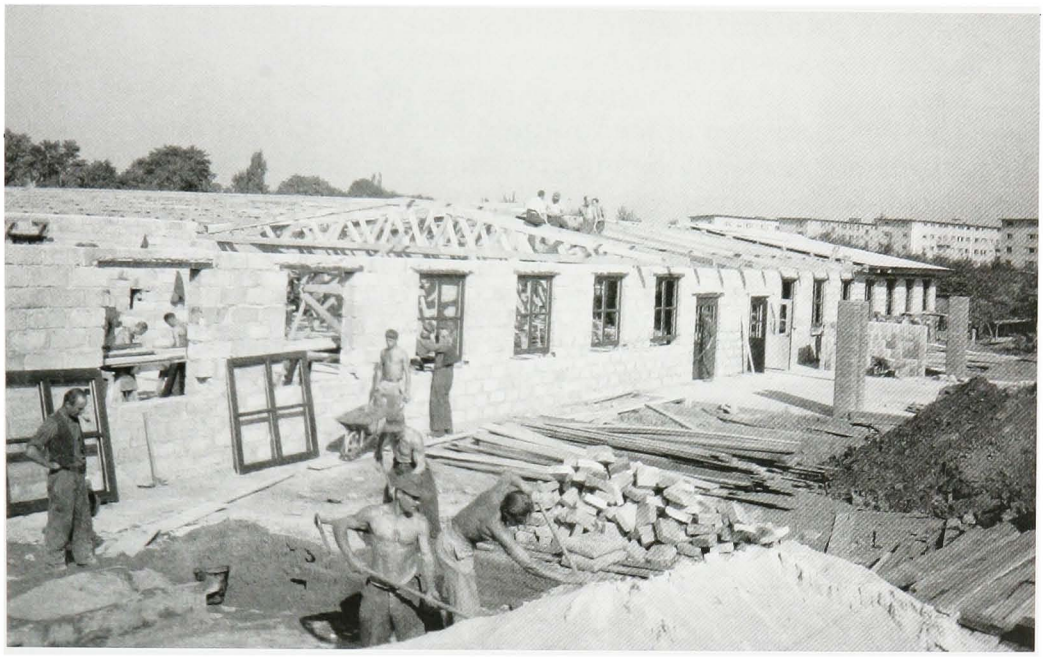


Power Station in Germany

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]

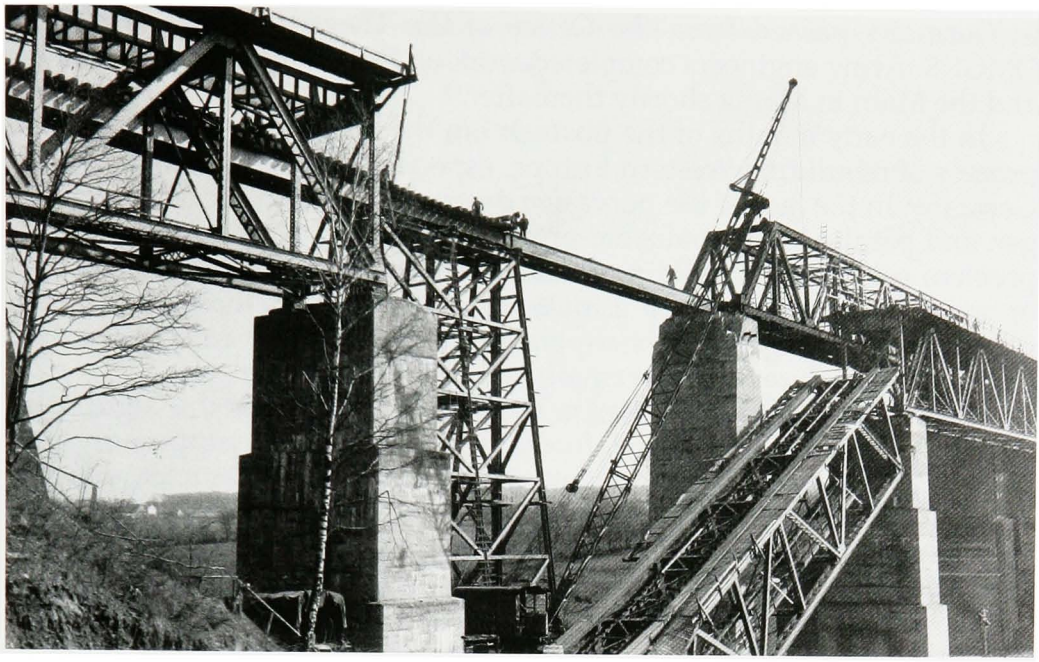
Coal, the principal fuel for heating and power in Europe, was one of the resources essential for recovery. Even before hostilities ended, the engineers of the Advance Section (ADSEC) of COMZ received orders to take over the coalmines in the captured parts of Germany and to restore them to operation under 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.

2

FROM OCCUPATION TO MUTUAL DEFENSE

Amid the dislocation of the immediate postwar period, the theater chief engineer, Maj. Gen. Cecil R. Moore, organized Army engineer services to meet the needs and priorities of the army of occupation in Germany. As he adjusted his engineer resources to support and sustain the civilian administration of German communities, Moore also had to remain responsive to the challenges that developed as the wartime alliance gave way to the tensions of the Cold War.

The army of occupation in Germany and Austria needed shelter for men and equipment; and the engineers had to locate—and then relocate, as new exigencies emerged—headquarters, housing, and real estate for both ground troops and aviation units, the latter organized in the Army Air Forces. After April 1946 an ever-increasing number of military dependents required a different kind of housing and support facilities. The German infrastructure and economy were in shambles. Competing demands for both material goods and labor, combined with the widespread physical destruction and social dislocation, created scarcities that disrupted normal markets and caused persistent problems for the chief engineer's office in managing work and setting priorities. The engineers faced only one area of oversupply: Vast quantities of equipment and materiel shipped into the European Theater to support the war remained on hand. Disposing of this excess materiel became a major concern for the chief engineer's office through the end of the decade.

Over the three years following Germany's defeat, the entire atmosphere in Europe changed. In 1948–1949 the engineers had to cope with the possibility of an armed conflict when the Soviet Union cut off free access to Berlin. This confrontation over Berlin between the Soviet Union and the three Western occupying powers posed incredible challenges to the engineering ingenuity of the U.S. Army.

All these responsibilities coincided with the tasks that carried over from immediate postwar imperatives. At the same time they accentuated a new range of engineer activities that marked a transition from concern

with occupying a defeated nation to developing a community of interest with a potential ally.

Engineer Activities in Occupied Germany

During the early years of the occupation the engineers pursued projects to secure and provide adequate housing, office, and operational facilities for the U.S. military—headquarters buildings, command schools, hospitals, depots, shops, special installations, bridges, railways, highways, utilities, and ports.[1] The United States Forces, European Theater (USFET) Office of the Chief Engineer coordinated planning for these projects. When the occupation began, the U.S. military already held more than 50,000 real properties in occupied territory in Germany, Czechoslovakia, and Austria, including private houses, apartment buildings, hotels, schools, office buildings, factory buildings, warehouses and depots, retail stores, and barracks.[2] The largest part of the engineers' work went into rehabilitating buildings that the Army had confiscated or requisitioned. New construction accounted for only 1 percent of the work in the summer of 1946 and less than 5 percent in the next several years.[3]

Supporting the U.S. Army in Europe

After the war with Japan ended in August 1945, many soldiers—frequently officers but also the small number of enlisted troops that were married—wanted to bring their families to the European Theater. Housing in Germany was in a deplorable state. Overcrowding in the U.S. zone created continued pressure to requisition more facilities, and the military government's list of requisitioned properties grew during the first year of occupation. In Württemberg-Baden, for example, U.S. troops occupied 29,394 rooms in November 1945, 42,002 in December, and 43,361 in January 1946.[4]

In spring 1946, Headquarters, USFET, decided to allow dependents into the theater. The Army began active planning for the change in September 1945, when USFET created a board to define "standards for accommodations in military communities." In early October the planning board sent proposed standards to the theater's major commands for review by the commanding generals, who were responsible for housing in their areas. In early December the major commands were directed to prepare plans for establishing and maintaining military communities. At the same time, the commanding general of the Theater Service Forces, European Theater, was directed to submit technical standards to Headquarters, USFET, "for all types of housing and installations, including recreational facilities."[5] General Moore proposed setting up an Engineer Planning Office "with German engineers, architects and draftsmen somewhere outside the Frankfurt enclave."[6] An office such as he described evolved within the chief engineer's office in Frankfurt,

where staff officers devised standards for housing and prepared a guide, translated into French and German, that both military communities and contractors could consult.[7]

Because inflation had disrupted normal pricing mechanisms, for several years after 1945 the Army measured the value of all work in hours of labor. During January 1946 the chief engineer's office formulated a set of general estimates of the amount of work necessary in the theater over the next two years. The January 1946 projection called for 92 million worker-hours. Seventy-seven percent of the labor and almost 74 percent of the spending—but only 24 percent of the supplies—were allocated to the establishment of military communities. By late 1946 USFET had selected permanent locations for the military communities, which would include soldiers, dependents, and an array of service buildings to house commissaries, post exchanges, chapels, and administrative offices. As work on the facilities progressed, it accounted for 60 percent of the construction program and 47 percent of supplies, almost double the quantity projected earlier.[8]

During the first winter of the occupation the chief engineer's office set out relatively simple rehabilitation plans to prepare facilities for soldiers. The American zone contained requisitioned and confiscated barracks or casernes that needed only minimal work to bring them to standards acceptable to the occupying army.[9] Many of these casernes had been built before the First World War, and most had been damaged during the recent fighting. Still, even with no repair at all, these buildings offered more comfort than tents.

The engineers were allowed to rehabilitate barracks only to austere standards. The chief engineer's office planned a first phase to repair facilities so that they would be "somewhat better than the wartime scales of accommodations."[10] As work progressed, the plan for rehabilitation foresaw improving accommodations to a level "somewhat less than is allowed in comparable posts ... within the continental United States."[11] No one at the time imagined that U.S. military personnel would use many of these facilities for more than forty years.

Accommodating dependents was more complicated than housing troops. Virtually all the apartments and private homes available for confiscation or requisition were in terrible condition as a result of neglect and damage during the war. Most facilities required extensive repair to be considered livable.[12] The program for rehabilitating quarters for dependents ran into a delay when the War Department ruled that neither permanent nor temporary construction funds could be devoted to housing dependents. In the face of protests from the theater, the War Department reconsidered and subsequently ruled that only appropriated funds could not be used for dependent housing. Surplus materials and money from reparations could be used to repair or to construct housing for dependents. Further, in contrast to earlier regulations, materials absolutely essential but not obtainable in the theater could be purchased in the United States. The reinterpretation made it possible to proceed. German

construction firms performed the work; German civilians, displaced persons, and prisoners of war supplied the labor; and costs and materials were charged to the Germans under the occupation budget.

Supporting the Air Forces

The U.S. Army Air Forces (AAF) enjoyed the same measure of support from the theater chief engineer's office as the field armies in Germany. The AAF had played a significant part in the war and needed appropriate facilities in occupied Germany. It chose as its command center the German airfield at Rhine-Main, seven miles southwest of Frankfurt. The U.S. troops had captured the field in April 1945 and put it at the disposal of an American fighter squadron for the last month of the war. Engineer battalions began rebuilding facilities at the airfield almost immediately. By midsummer the engineers had completed nearly all of the initial work, and by autumn Rhine-Main began operating as a major AAF base. Expansion of facilities continued over the next several years.[13]

The AAF formulated no construction plan for 1946, although U.S. forces retained control of over forty former German air bases and a few active bases in France and Britain. Even without major plans, the Office of the Chief Engineer, USFET, allocated over 12 million worker-hours of labor to AAF projects for the year—13 percent of its total two-year allocation. Fifty percent of the work scheduled for the AAF went into facilities at Rhine-Main, in part because it also opened for limited commercial use in May 1946. Seven months later a large passenger terminal opened for general commercial traffic. The remaining 50 percent of the engineer workload for the AAF for 1946 went into projects for housing, facilities, and routine maintenance.[14]

Berlin's main airport, Tempelhof, also became a locus of Army engineer activity immediately after the war ended. The airport's design had been avant-garde when planned in the mid-1930s, and 80 percent of its facilities had been completed by the time construction was suspended in 1943. Bombing and systematic destruction by the invading forces had left it nearly useless. When U.S. forces took control of Tempelhof in July 1945, the terminal and field were in shambles and needed immediate attention.

The 473d Air Service Group assessed the damage at Tempelhof and immediately set about reconstruction.[15] Troops cleared away debris and restored utilities. The airfield's one runway was sod, so the 862d Engineer Aviation Battalion began work on a new 6,000-foot runway. Over a base of crushed brick taken from the rubble of Berlin, the engineers poured a two-inch layer of concrete and then topped the concrete with pierced steel planks. When the airfield opened for military use, planes landed on the pierced plank runway and took off from the sod strip.[16]

By 1947 the Army engineers had begun work on other airfields in Frankfurt, Giebelstadt, and Munich and on AAF depots in Erding, Oberpfoffenhofen, and Roth. Work at Rhine-Main accounted for one-third of an estimated 51 million worker-hours that the engineers provided for

the AAF in 1947.[17] When the U.S. Air Force emerged in September 1947 as an independent military service, decisions in Washington ordained that the Army engineers, not its own engineer component, provide support. The Army engineer units detailed to the Air Force were designated Special Category Army with Air Force units.[18]

Juggling Competing Demands

During the first three years of the occupation, construction supplies were never adequate and certain materials were always lacking, particularly electrical fixtures and switches, plumbing supplies, paint, and plaster.[19] Because the engineers could not supply all essential projects, the chief engineer's office contrived a special category of hot projects that received preferential distribution of supplies. The office's list of hot projects, based on the staff's judgment of relative importance and on information from construction officers in the field, changed from month to month. The definition of *hot* was, to be sure, unofficial, and frequently at variance with the judgment of the using services, each of which tended to consider its own projects the most important.[20]

One of the earliest hot projects was the creation of facilities at Rhine-Main Air Base for the USFET's Air Transport Command (ATC) and the European Air Transport Service. The ATC began limited service from Rhine-Main in May 1946, but construction became more urgent later that year when the ATC received orders to relocate from Orly Field near Paris to Rhine-Main. The move had a ripple effect, pushing work at the neighboring Wiesbaden military community into the hot project category, because Wiesbaden became the new headquarters of the ATC. The only way to liberate space for the ATC at Wiesbaden was to move other units out of that city; each such move provoked another hot project. Similarly, construction in the Frankfurt area became a hot project by late 1946 when authorities chose the city as the administrative center for the merged British and American zones of occupation, renamed Bizonia. The overwhelming wartime devastation in Frankfurt put the city behind all other areas in the U.S. zone in providing dependent housing. As administrative services expanded, drawing ever more people to the city, securing adequate facilities for U.S. military personnel became increasingly difficult.

As a step toward resolving the situation, the chief engineer's office created a liaison team to work with the city's mayor to adjust space, labor, and supplies. Army engineers made supplies available from their stocks to speed the rehabilitation. The engineers concentrated labor in Frankfurt by transferring labor service companies—third-country nationals paid by the Army—from Stuttgart and Nuremberg and German workers from projects at Rhine-Main and in Griesheim.[21] By 1 January 1947, military housing in Frankfurt had first demand on materials. In the first three months of 1947 work crews completed 106 housing units—far short of the 7,000 additional units needed for civilians and officers.[22]

The designations of hot projects by the chief engineer's office illustrate that even in late 1946 decisions concerning engineer issues were based on immediate need and amid shortages. Expedient solutions displaced coordination. With both operations and project approval decentralized, execution of a coherent construction program remained beyond the reach of the chief engineer's office. As with nearly all construction, the real responsibility for the housing projects lay with the major subordinate commands; and they operated more or less independent of the efforts of the chief engineer to coordinate planning, procurement, and supply.

Examples abound of uncoordinated solutions to urgent problems. In the American military community in Bad Nauheim, north of Frankfurt, getting power to the residents superseded concerns about standardization. Direct current and alternating current served the same block of residence units, so the purchasing of appliances could not be standardized. Similarly, in the Höchst compound west of Frankfurt, some houses had 110-volt circuits installed in one room and 220-volt circuits in another. When a power failure hit the compound in October 1946, some houses lost power while others did not. Some houses lost power on only one floor. Col. Robert Fleming, chief of construction in the chief engineer's office, commented in a staff briefing that he "tried to explain to a friend of mine why only his second floor lights were out, but I don't think he yet believes me."[23]

The tension between the chief engineer's vast responsibility and his very limited authority—he operated through only technical and not command channels—constituted a vexing administrative issue. U.S. military construction and procurement proceeded on an ad hoc basis, command by command, with disturbingly little attention to overall theater needs.[24] For example, the Third Army's plans to construct an ice rink with a roll-back roof in Garmisch received approval by the commander over the objections of the chief engineer's staff, particularly Cols. Robert Fleming and Louis W. Prentiss, Sr., the deputy chief engineer in 1946. The engineer colonels in Third Army gloated publicly that they had humiliated their counterparts in Frankfurt. Their arrogance thoroughly angered Fleming. Five years later, he "settled some scores." Fleming had become assistant chief of engineers for military operations, and Prentiss headed the Personnel Branch in the Office of the Chief of Engineers in Washington. As Fleming remembered, "I got General Prentiss to go along—and two careers got ended because the two men involved [had been] too stupid to realize that cooperation was an asset."[25]

Fleming, too, had had problems with unreasonable projects. He had "hit the ceiling" upon learning that the engineers had received orders to provide the wife of the USFET commander in chief, General Joseph T. McNarney, with a cow barn so that she could have fresh milk daily. When he calmed down, he reasoned that "a cow barn was a small price to pay" for the good will of the four-star theater commander and let the project proceed.[26]

Construction Costs

As the occupation continued, money to support the U.S. military presence in Germany became ever scarcer. After four years of war Americans were ill disposed to invest in any military needs at all, much less in new facilities to house the U.S. Army in Germany. At the end of the war in 1945, military spending garnered 39.1 percent of the U.S. gross national product; by 1948 military spending had fallen to 3.7 percent.[27] Politically imposed budget constraints meant that troop strength in Germany dropped steadily from 342,000 in July 1946, to 135,000 in July 1947, to just over 100,000 by the end of 1948. In this climate, resources available to the military, and to the Army engineers, declined drastically. In the first quarter of 1947 major and minor construction, already down sharply from wartime levels, required 10 million worker-hours; by the same quarter of 1948 that figure was down to just under 6 million worker-hours. The reduced engineer budget for 1948 imposed "a drastic curtailment of expenditures" on both construction and other activities for the year.[28]

Budgetary concerns led commanders to make penny-wise but pound-foolish decisions. In mid-1946 the theater chief engineer's office warned that the effort to hold down expenses in rehabilitating troop facilities was false economy. Commanders were incorporating "less desirable buildings requiring more labor and materials per unit" into their inventory.[29] In late 1947 the engineers observed repeatedly that maintenance costs had increased because of the "serious deterioration of the facilities constructed during the last two years."[30] Indeed, funds "saved" from the budget through sparse rehabilitation went increasingly toward maintenance and repair. By 1 January 1948, maintenance consumed 90 percent of the total engineer labor, supplies, and funds. The early decisions during the occupation to build cheaply and for the short term haunted the Army for decades.[31]

Another factor increased the European Command's (EUCOM) expenditures for maintenance: the decision to shift an ever-greater burden away from the German government. Because of the escalation of tensions between the United States and the Soviet Union, German public opinion became more important to American strategists. Accordingly, in 1947 the U.S. military began to reduce "as much as possible the financial, manpower, and production burden of the occupation upon the indigenous economy."[32] This policy reflected the changing relations between the U.S. Army and the German polity developing with the active encouragement of the Western Powers in their zones of occupation. As the military sought to detach itself from dependence on German payments, it had to assume more of the costs of maintenance and repair directly.

Dealing with Excess Materiel

The eminent nineteenth century British historian Thomas Macaulay described the essence of war as violence, but in modern times the essence

of war has become logistics. In World War II the industrial and logistical system developed by the United States created the conditions for victory by pumping the materiel of war into the European Theater at a prodigious rate. By May 1945 over 5 million tons of war supplies were on hand in Europe. Solving the quandary presented by the volume of war materiel no longer needed became one of the most difficult and persistent problems that the Army engineers faced. Resolving the problem involved four years of intense effort.

Immediately after the victory, General Moore's Office of the Theater Chief Engineer received the assignment to clear the liberated countries as rapidly as possible of the thousands of tons of war supplies that remained in depots behind the advancing combat troops. About 90 percent of the materiel was in depots in rear or intermediate areas (France and Belgium) rather than forward in Germany. Moore's orders were to concentrate these supplies in Germany, where the army of occupation could draw upon them.[33]

The Army engineers began consolidating war supplies by constructing new depots and transferring materials to them. Before hostilities ended, the Army had established its forward engineer depot in an encampment formerly used by German military engineers near the town of Hanau in the Frankfurt area. Within months the engineers had added major supply depots in Fürth, Bremen, Mannheim, and Berlin in the U.S. zone in Germany and in Linz in Austria. Thirteen supply depots (1 in Britain, 5 in Belgium, and 7 in France) remained active throughout the Western Base Section.[34] As American military involvement in the liberated countries of France, Belgium, and the Netherlands decreased, these supplies could be transferred to Germany.

The Hanau Depot

To prepare for the influx of materiel from the Western Base Section, particularly from France and Belgium in 1946, the chief engineer's office began a substantial program to expand the depot in Hanau. The goal—to establish stabilized open storage, closed storage, shops, access roads, utilities, and railroad facilities—created a long catalog of projects: improve drainage; provide new latrines, a heating plant, a water system, and a supply of potable water for the depot; pave motor pool areas; and build rail spurs and related railroad facilities. The engineers also needed to build an electrical distribution system and additional warehouse space, winterize lubrication racks, put a fire prevention system in place, stabilize streets and open areas, and create hardstands for processing and parking vehicles. Cols. Paul D. Berrigan and Robert Fleming, successive heads of the Construction Division in the Office of the Theater Chief Engineer, supervised the Hanau project from Frankfurt.[35]

Not only did construction of new facilities fail to keep pace with the influx of goods from areas outside Germany, but the arrival of materiel often got in the way of construction. As an additional complication, requirements changed in the summer of 1946. Anticipating an increase

in the number of displaced persons in the U.S. zone in Germany, officials ordered the materials to construct prefabricated huts for 40,000 persons from storage areas in Belgium and France. The officials set 1 September 1946 as the target date for completing the transfer, without realizing that facilities for unloading and storage at the existing depots in Germany were inadequate to handle the volume of material involved.[36]

Management of the movement of excess war supplies broke down in part because redeployment removed trained engineer personnel. Lack of proper controls contributed to pilferage. The engineers did not have personnel in France or Belgium with sufficient experience to select the materials most adaptable to salvage and reuse. When a shipment of 20,000 tons of miscellaneous parts for prefabricated huts arrived in Hanau unlabeled and unsorted, Colonel Fleming observed that "it would have taken a battalion a year to sort them out" and build the huts.[37]

By 1 July 1946, inadequate facilities in Hanau left 1,800 railcars waiting to be unloaded. By late summer several hundred barges lined the Main River because the depot had insufficient personnel to unload them and insufficient facilities to store their cargo. To alleviate the backlog, the engineer's office established temporary construction supply dumps in each of the seven major commands and opened a new engineer supply depot in Gelnhausen.[38] By late 1946 the Hanau depot had become not only the storage point for all supplies from the Western Base Section but also the main depot for the U.S. zone of occupation in Germany.[39] In March 1947 all engineer supply depots in Germany were officially redesignated as subdepots of Hanau.[40]

Harsh weather during the winter of 1946–1947 brought more difficulties for the overburdened operators of the Hanau depot. To husband limited supplies in the face of the severe cold, they rationed electrical power and gasoline, substantially disrupting construction to expand the depot's storage facilities. Pressure on the depot increased when the Mediterranean Theater was inactivated in early 1947 and 9,800 long tons of supplies moved from Italy to the U.S. zone in Germany. In April, May, and June an additional 6,940 long tons of supplies—cement, lumber, and materials for electrical and plumbing work—arrived from the Mediterranean Theater.[41]

Although the Army engineers employed German contractors, construction throughout 1947 at the depot in Hanau remained inadequate to accommodate the incoming supplies. In Giessen, the Army built 500,000 square feet of new covered storage for a quartermaster depot. In Griesheim contractors rehabilitated and added to an I. G. Farben Company plant and buildings to adapt them as an ordnance depot. Projects at these sites included hardstands and rail, road, and other service connections, as well as warehouses. In spite of additional facilities, the depots still could not absorb all of the materiel arriving in Germany. By the summer of 1947 the target date for gathering all engineer supplies at the depot in Hanau had been pushed back well into 1948.[42]

Although its facilities and its personnel were both overtaxed, the Hanau depot provided a central point of distribution for the amassed

materiel. Designating a central distribution point enabled the chief engineer in Frankfurt to manage construction materials more effectively throughout the U.S. zone. In early 1947 the chief engineer's office began issuing lists that specified the quantities of each item of reserve stocks in Hanau so that engineers and commanders in the communities would know what was available in the theater.[43] At the same time, depots closed in the Western Base Section and supplies left France and Belgium for Hanau. Within Germany, as the movement of goods passed its peak, the engineer construction dumps in Kassel and Landsberg no longer had to provide overflow space; their stocks could be transferred to Hanau. By June stocks from Illesheim and Schwandorf were moved to Hanau and the facilities at Illesheim passed to the Ordnance Corps for use as a vehicle reserve park.[44] By September the supply point in Stuttgart was empty and supplies from Berlin had also been transferred to Hanau. The last shipment from the Mediterranean Theater—3,000 tons—was en route from Italy. By March 1948 about 3,190 tons of engineer supplies remained to be moved from subdepots to Hanau. Six months later all command stocks had been removed from the other subdepots, which were then closed, leaving Hanau as the only engineer service depot in the U.S. zone in Germany.[45]

Construction of storage space continued in Hanau. The depot gained usable space when in 1948 the Army turned over tens of thousands of tons of supplies to a new semipublic German corporation under the program called Bulk Transfer of U.S. Army Property.[46] As consolidation of supplies progressed and the inflow of goods lessened, the command of the Hanau depot began to gain control of the materiel in the warehouses. In the final quarter of 1948 the Hanau depot undertook an inventory of its entire stock of general engineer and spare parts. The chief engineer's office considered this "the biggest step forward that has been made since the depot was activated."[47] In January 1949 the Hanau depot passed inspection with a rating of excellent, in sharp contrast to its unsatisfactory rating just eleven months earlier.[48]

Fleming remembered the situation at the Hanau depot as "the biggest single problem" that the engineers faced in the years immediately after the war. The evolution of the Hanau depot illustrates several aspects of the immediate postwar years. The engineers had to fulfill assignments with limited resources and insufficient time to plan. To some degree, these limitations led to mistakes, inefficiencies, waste, and confusion. In retrospect, Fleming called the hasty consolidation of supplies in Hanau "one of the best examples in our Army of wand-waving and wishful thinking." Despite the problems, a substantial quantity of materiel was actually gathered and warehoused in Hanau, and a good percentage of it was salvaged and used. By early 1949 the engineers could claim some success in Hanau. That success came at personal cost. Fleming considered the whole process "a tragedy because several very fine officers trying to do a job were harassed to the point that their careers were ended."[49]

Repair and Rebuild Program

The Repair and Rebuild program at the Hanau depot offers another example of engineer success. In 1947 the 485th Engineer Heavy Shop Company (later designated the 507th Engineer Shop Company) was attached to the depot. This unit's mission was to repair and maintain mechanical equipment for the Army. Because the quantity of equipment needing work was more than the company could handle, the engineers turned to the German economy.

In 1947 the Hanau command awarded contracts to eleven German firms to repair U.S. military equipment. Arranging the contracts was not easy. German industrialists were reluctant to invest their capital, and German workers were reluctant to take payment for their labor in the worthless German Reichsmark. To overcome these obstacles, the depot put up the basic materials required for production out of its stocks and made special arrangements with Army agencies to provide the workers with one hot meal a day. With these inducements in place, three plants opened during the spring of 1947: a Daimler-Benz plant in Uhingen-Göppingen, where heavy cranes were rebuilt; the Kaeble plant in Backnang, which rebuilt tractors, rollers, and graders; and the FMA Porkorny plant in Frankfurt, which rebuilt air compressors. By July 1947 eight more firms had joined the list of contractors for the Hanau depot's rebuild program: Beinhorne Electrical Shop in Hanau, Sabel & Scheurer in Oberursel, Vulcan Diesel in Bremen, Karl Wolfe in Göppingen, another Daimler-Benz plant in Stuttgart, Alfred Teves in Frankfurt, Karl Schmitt in Fulda, and Fritz Leitz Machine Works in Oberkochen.

For almost a year these eleven plants could not keep up with the demand from U.S. military units for rebuilt equipment. By late 1948 the Repair and Rebuild program moved ahead of demand, and in the first quarter of 1949 it had made so much progress that a Heavy Equipment Storage Section had to be opened in Hanau to house and maintain the reconditioned equipment until it was requisitioned.[50]

H. Jace Greene, one of the civilian engineers recruited from the United States, became involved in the Repair and Rebuild program early in 1947. He had arrived in Germany in October 1946 and had first served as the operations officer of the 333d Engineers in Rüsselsheim, outside of Frankfurt. The following February Greene was reassigned to Stuttgart to carry on the work of the 555th Engineers. This new assignment, to supervise reconstruction of five German factories as Army shops to recondition jeeps, trucks, and tractors, began what became a thirty-year career for Greene with the Army engineers in Germany.[51]

Over the winter of 1948–1949 the Army reduced the number of service contractors involved in the rebuild program. By that time tremendous quantities of heavy engineering equipment had been salvaged and repaired. In 1950 the rebuild plants produced an average of 200 major and 150 minor items of equipment a day, from rebuilt earthmovers to chainsaws and water pumps for engines. By 1952 the program had produced

substantial quantities of such items as tanks, trucks, weapons, jeeps, tractors, cranes, radio equipment, light and heavy construction machinery, smoke generators, flamethrowers, and household furniture. The cost of the program represented about 30 percent of the replacement value of the equipment reconditioned. The German economy benefited through increased employment and expanded industrial capacity, important factors in the early phases of Germany's recovery.[52]

Reasserting Order and Discipline

A year after the occupation began it was clear that the rapid demobilization of the U.S. Army in Europe, coupled with difficult living conditions and frequent changes in command, had led to a decline in morale and discipline among the troops. The U.S. forces in Germany had degenerated into what one of the engineers called "almost an unruly mob" and had ceased to exist as an effective tactical fighting force.[53] The U.S. Constabulary, formed early in 1946 to act as a mobile military police force for the U.S. zone, rated only 65 percent on a measure of combat readiness. The 1st Infantry Division, the other unit available in event of combat, rated just 20 percent.[54]

In August 1946 Lt. Gen. Clarence R. Huebner, commander of the 1st Infantry Division during the war, became chief of staff, USFET, with the assignment to reassert discipline and to restore the Army's tactical readiness.[55] By the time Huebner assumed his position in Frankfurt, the sense of urgency associated with combat had long since disappeared. The occupation force had assumed a "supervisory rather than operational" role, and the challenge had shifted to meeting the duties of the occupation with an ever-shrinking troop base and budget.[56]

At the center of military planning in Washington, the Joint Chiefs of Staff recommended and the president approved a reorganization that had two objectives. One goal was to reconfigure U.S. forces overseas to a structure attuned to peacetime and to the mission of the occupation, with a single commander responsible for the operations of all military services in each overseas command. A second goal was to unify the armed forces under a new Department of Defense (successor to the War and Navy Departments) that would command four separate services: the Army, a newly independent Air Force, the Navy, and the Marine Corps.[57]

In Europe, these reforms led to the elimination of the wartime designation "theater" and the reorganization of U.S. forces under the new European Command (EUCOM), established in Frankfurt on 15 March 1947. On 15 November a separate Army command, the U.S. Ground and Service Forces, was created and then redesignated as the United States Army, Europe (USAREUR).[58] General Lucius D. Clay assumed command of EUCOM while retaining his position as U.S. military governor in Berlin. Huebner remained in Frankfurt as deputy commander in chief for Europe and EUCOM's chief of staff. In early 1948 EUCOM moved its headquarters from Frankfurt to Heidelberg. Clay operated from Berlin until

15 May 1949, when he returned to the United States and retired. All of Clay's successors as EUCOM commander in chief resided in Heidelberg.[59]

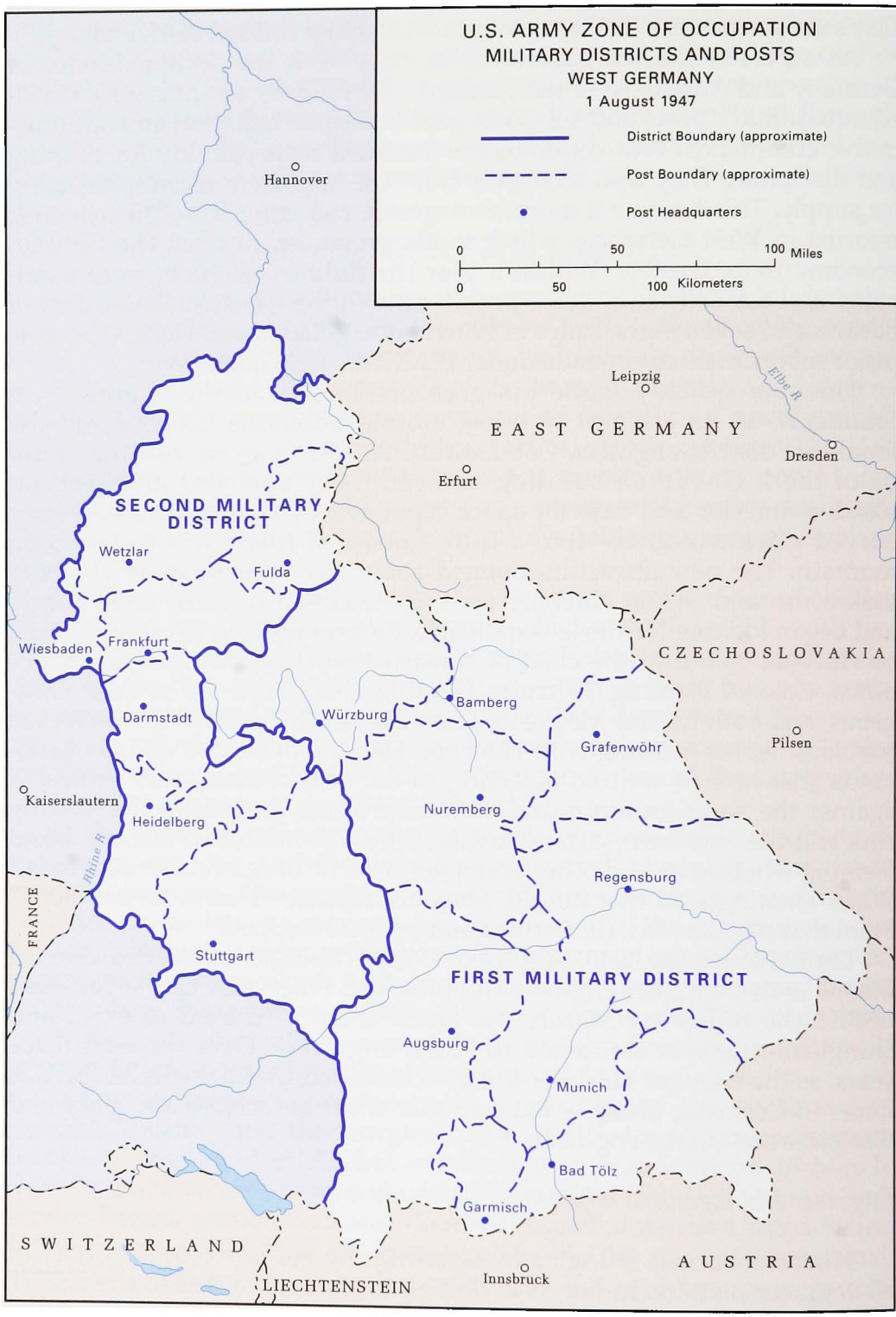
As a part of the reorganization in early 1947, the occupied areas of Germany and Austria were reorganized. The military districts were divided into military posts and subposts, which became logistical and administrative commands. Post commanders assumed responsibility for training and discipline. They also took over from the engineers the responsibility for supply. This became a more manageable task after the 1948 economic reforms in West Germany, which made procurement from the German economy more feasible. Within a year the military districts were eliminated and the sixteen military posts—nine in the German state (*Land*) of Bavaria and seven in the states of Württemberg-Baden and Hesse—became major subordinate commands under EUCOM.[60] (*See Map 4.*)

Huebner quickly made his presence known to the engineers in Frankfurt. In an attempt to boost morale, someone had ordered the Frankfurt district engineer, Col. Howard A. Morris, to convert the rotunda of the I. G. Farben building—a beautifully balanced architectural blend of interior and exterior space separated by tremendous two-story curved glass windows—into a fully furnished Main Street–style soda fountain. The new attraction opened about two weeks before Huebner took command. When Huebner arrived, he closed it down immediately and began looking for those responsible. Fingers pointed to the engineers, so Huebner called in the chief of construction from the chief engineer's office, Colonel Fleming. In truth, Fleming also found the project outrageous, and both he and Morris had unsuccessfully opposed the project as frivolous. At his meeting with Huebner, Fleming presented all the memoranda that he had written objecting to the project and orally protested against the soda fountain and similar projects, including the skating rink and the cow barn. After listening for a few minutes, Huebner asked Fleming whether he had other examples of such "unreasonable demands." When Fleming said that he did, Huebner replied, "I want to see them." From that day onward, the extravagant projects stopped.[61]

On 19 November 1946, Brig. Gen. Don. G. Shingler succeeded General Moore as theater chief engineer in Frankfurt. When EUCOM superseded USFET the following March, the label "theater" ceased to exist, and Shingler's title was shortened to "chief engineer." Over the next three years, as the changes Huebner initiated modified the character of the U.S. forces in Germany, Shingler led a similar effort to increase efficiency and discipline among the engineers.[62]

Engineer Management Efficiency

Huebner backed Shingler in asserting the authority of his office in all engineer matters. In late 1946 Shingler's staff submitted to the USFET general staff a plan to concentrate all construction activities under the operational control of the theater chief engineer.[63] The proposal became the basis for reforms in the management of engineer assets.


U.S. ARMY ZONE OF OCCUPATION
MILITARY DISTRICTS AND POSTS
WEST GERMANY
1 August 1947
District Boundary (approximate)
Post Boundary (approximate)
Post Headquarters
0 50 100 Miles
0 50 100 Kilometers
Hannover
Leipzig
Elbe R.
EAST GERMANY
Dresden
Erfurt
SECOND MILITARY DISTRICT
Wetzlar
Fulda
Wiesbaden
Frankfurt
CZECHOSLOVAKIA
Darmstadt
Würzburg
Bamberg
Grafenwöhr
Pilsen
Kaiserslautern
Heidelberg
Nuremberg
Rhine R.
FRANCE
Regensburg
Stuttgart
FIRST MILITARY DISTRICT
Augsburg
Munich
Bad Tölz
Garmisch
SWITZERLAND
LIECHTENSTEIN
Innsbruck
AUSTRIA

Map 4

After the reorganization in March 1947, EUCOM had seven major commands: the First and Second Military Districts; U.S. Air Forces, Europe; U.S. Forces, Austria; the Berlin Command (Office of Military Government United States); the Continental Base Section; and headquarters command (Frankfurt). EUCOM issued directives affirming that the commanding general of each major command retained responsibility for construction in his area. Simultaneously, these directives reemphasized the pivotal role of the chief engineer as the central planner for all construction, with authority to approve all major projects, that is, those involving more than 10,000 worker-hours of labor and supervision.[64]

As a result of this mandate the chief engineer's office reviewed 266 projects in the first quarter of 1947. Of these, the office approved 200 but rejected 66, leading to a substantial decrease in the construction program, in some areas a drop of as much as 50 percent. In the following quarter the major commands seemed to get the message. The chief engineer's office received only 84 projects to review; of these, they approved 54, rejected 2 outright, and returned 28 "for further study." By the third quarter of 1947 the commands submitted only 79 projects, less than one-third of the number proposed at the beginning of the year. Of these, the chief engineer's office turned back or deferred 40 percent. Many years later Col. Alan J. McCutchen, who succeeded Fleming as chief of construction, referred to this as the "prevention-of-construction phase" of engineering activity in Europe.[65]

The chief engineer's office continued to strengthen its role. By the last quarter of 1948 the engineers at military posts within the major commands no longer had the discretion to budget for projects requiring 5,000 or more worker-hours. Only projects "approved by Headquarters, EUCOM" received funding through the chief engineer's office. In other words, the chief engineer's office had the final word.[66]

Under Shingler's leadership the chief engineer's office developed other ways to manage engineer projects more efficiently. In the summer of 1947 the staff set up a post engineer training team made up of people from the central office trained in real estate, solid fuels, construction and utilities, cost accounting, engineer supply, repair and maintenance of engineer equipment, and fire prevention. The First and Second Military Districts, under which the military posts were organized, each formed a district team that was trained by the team in the chief engineer's office. The three teams worked simultaneously and completed visits to all sixteen military posts by the end of September.[67]

The renewed emphasis throughout EUCOM in 1947–1948 on military readiness, efficiency, and the elimination of unnecessary staff positions created a new activity for the engineers. The office began to engage German and third-country personnel to substitute for soldiers in nonmilitary duties. The Engineer School in Murnau assumed the task of preparing these local workers for new responsibilities; in May 1947 the school admitted the first German students to its training courses. Seven Germans graduated from training courses in June, and by September another 146

German engineer specialists graduated. The school trained increasing numbers of local nationals in technical specialties through the 1940s.[68]

Tactical Readiness

General Huebner's efforts to bring order and discipline to U.S. military forces in Europe stimulated other projects for the Army engineers. To address tactical readiness and troop training, Huebner made field exercises mandatory. He ordered elements of the 1st Infantry Division, still scattered in early 1947 throughout the entire U.S. zone, to assemble at a training area formerly used by the German army near Grafenwöhr, about twenty miles southeast of Bayreuth. Here he put company-size units through combat training. During 1947 and 1948 a total of about 1.5 million worker-hours went into renovation and construction of training facilities at the Grafenwöhr summer training camp. Although tents served the troops as shelter in the field, engineers constructed more durable wooden huts for kitchen, sanitary, recreational, and administrative facilities. During late spring 1948, eight separate camps were constructed at Grafenwöhr, with access roads, latrines, water systems, lights, mess and headquarters facilities, and floors for the tents. Headquarters, 26th Infantry, oversaw the preparations; and the Construction Branch of the chief engineer's office provided materials and trained engineers as supervisors.[69]

The U.S. military has used training facilities in Grafenwöhr since their construction in the late 1940s. Members of the 43d Antiaircraft Battalion are training with the .30-caliber M2 carbine in Grafenwöhr in early 1956.

Huebner also ordered extensive rehabilitation for Vilseck Caserne, where the U.S. Constabulary was slated for special combat training under the plan to revitalize American ground forces. The caserne consisted of about 120 buildings damaged by war and three years of occupancy by displaced persons. Because Vilseck was isolated from other U.S. military installations, recreational facilities for soldiers received special attention.[70]

Other than Grafenwöhr and Vilseck, the U.S. zone contained very limited areas for military exercises. The U.S. Army had permission to use training facilities in the British and French zones, but this involved greater travel for the troops, so EUCOM sought more training space within its own zone. In 1949 the command obtained another small training area for regiment-size units in Wildflecken in northern Bavaria. Like Grafenwöhr, it lay very close to the German-Czech border.[71]

Administrative Reorganization

In the summer of 1946 the United States invited the three other occupying powers to merge economic administration of the zones of occupation in Germany. The French and the Soviet Union declined the invitation, but the British accepted. The new administrative authority, Bizonia, took formal shape on 1 January 1947. Later that year the two powers decided to consolidate the administrative offices of their combined zones in Frankfurt. To make room, the EUCOM headquarters staff and the staff of the chief engineer's office moved to Heidelberg, a city spared from bombing during the war because of the historic and cultural associations it held for the British and Americans. To accommodate EUCOM, the U.S. Constabulary moved from Heidelberg to Stuttgart. EUCOM located its headquarters in Grossdeutschland Caserne, which in August 1948 was renamed Campbell Barracks. This sequence of moves began in February 1948 but was not completed until early 1949.[72] Beginning in 1948 the Army engineers supervised military engineer activity in Europe from Heidelberg.

The movement of headquarters to Heidelberg demanded a major commitment of labor. The construction program to prepare the area involved widening roads, providing office space and a new command post, preparing hardstands for parking military vehicles and five new parking lots for passenger cars, and building a new quartermaster gas station and a new engineer supply point.[73]

Although largely undamaged by air attacks, Heidelberg had not escaped the effects of the shortages prevalent throughout Germany before and during the war. Many of the city's buildings and homes suffered from years of neglect and the absence of such basics as paint, heating fuel, and utilities. The Army engineers had to carry out substantial rehabilitation on requisitioned property, which included over a thousand German homes and every hotel in Heidelberg, as well as military installations. Patton and Campbell Barracks were completely renovated, but the most intricate and delicate work went into the private homes that housed the general officers at EUCOM headquarters.

One of these facilities was the 72-room mansion of the Robert Bosch family on Schloßwolfsbrunnenweg. Sgt. Stanley Sikirica of the 252d Engineer Combat Battalion received orders to coordinate and supervise the carpentry, masonry, painting, and related work to repair the deterioration attributable to the lack of materials going back to the 1930s. "The wallpaper was terrible. Everything was falling down. The fresco work was breaking off the ceilings and deteriorating to the point [that] there was no adhesive, and everything was just mildewing ... and the floors—the parquet floors—were warped. The heating systems were out; there was no coal or coke to burn for years to heat these large mansions."[74]

To restore the quarters as faithfully as possible to their original state of artistic beauty, the engineers engaged local people, including a fresco craftsman in Heidelberg. The parquet floors provided the greatest challenge. Finding wood to match the three tones in the original was difficult in an economy that had faced wood shortages for several years. But the engineers succeeded, and Sikirica recalled the work with pride. During the 1950s the Army returned the homes in Heidelberg to their German owners.[75]

The First Berlin Crisis

The work in Heidelberg took place as political tensions reached a public crescendo over Berlin. Shortly after the end of the war the United States and Britain moved to create autonomous German economic and political administrations within their zones. In January 1947 the two allies merged their zones and created Bizonia. The Marshall Plan followed in June. By 1948 France added its zone, and the Western allies prepared to introduce reforms for their unified zones—political autonomy for the German inhabitants, an economic reform program, and a revaluation of the German currency. All four powers recognized that economic fusion of the three Western zones would ultimately lead to a politically united West Germany.

For the Soviet Union, such a development seemed to contradict the results of its victory in battle. Economic recovery under an American-led capitalistic system threatened Soviet ideological and political control of both East Germany and Eastern Europe. In diplomatic meetings in early 1948, the four powers failed to agree on how to deal with Germany. The Western Powers continued to prepare for the introduction of the new German currency, and the Soviet Union prepared to do what it could to make the West Germans pay dearly for their acceptance of Western patronage. Soviet leaders chose to squeeze Berlin.

On 20 June 1948, the Western Powers introduced the new Deutschmark (DM). Four days later the Soviet Union closed all access to Berlin by rail. Within six weeks Soviet military officials stopped all road and canal traffic and shut off electricity to the Western sectors. The 2.5 million inhabitants of West Berlin—formed from the sectors occupied by the United States, Britain, and France—were thereby cut off from the supplies they

needed to survive. The Western allies viewed saving Berlin from slow starvation or from being swallowed up within the Soviet system as a test of their willingness to defend freedom. President Harry S. Truman was determined to see that Berlin survived.

General Clay favored confronting the Soviet armies on the ground by trying to force a convoy across the land routes to Berlin. Clay estimated that the city's civilian population would need a minimum of 4,000 tons of supplies per day and that the allied military forces would need another 500 tons a day. Without a convoy, all these supplies would have to reach the city by air. Clay expressed doubts that such a logistical feat could be sustained. Rather than force a confrontation on the ground, President Truman chose to order the supply of Berlin by air.

The Berlin Airlift began in late June 1948 as a short-term expedient to supply the allied forces. Within weeks it expanded into Operation VITTLES, an unprecedented and much more demanding operation to supply the city's entire civilian population. The airlift involved split-second timing as planes formed an "air bridge" between West Germany and Berlin, taking off and landing at all hours of the day in all kinds of weather. By December 1948 the airlift was delivering more than Clay's projected minimum of 4,000 tons per day. During January and February average daily tonnage climbed to 5,500. At its peak in the spring of 1949, the air bridge to the city delivered 8,000 tons of supplies per day.[76]

The moorings of the allied air bridge lay firmly on the ground—on the airfields from which the planes took off and on which they landed. Maintaining airfields in Berlin and in the U.S. zone was the responsibility of the Army engineers. Engineer work for the Air Force had declined late in 1947 and in the first half of 1948, but it jumped sharply with the airlift. Between 1 July and 30 September the chief engineer's office recorded 1.5 million hours of work for the Air Force, of which 80 percent went into airfield construction in Berlin. Much of the remainder went into the air base at Rhine-Main—dubbed Rhine-Mud by those who worked there—the starting point for airlift flights.[77]

Work on the airfields in Berlin involved keeping the limited runways open despite the heavy pounding by a steady succession of planes packed to the maximum. It also meant increasing the number of runways available. When the blockade began, Tempelhof Airfield in the U.S. sector had only one runway suitable for landing cargo planes. It was evident within days that this runway could not stand up to repeated use by heavily loaded C–47 and C–54 class aircraft. The weak base constructed in 1945 from Berlin rubble gave way, the layer of concrete broke, and the hooks of the pierced-steel landing mats tore off, causing the metal mats to warp and bend. In response, teams of workers took up positions along the runway. Wherever a fault appeared, a team would rush onto the runway, lift the plank surface, fill the cavities with a sand-bitumen mixture, bend back the planks to their correct positions, and weld steel straps between them. The crews had only a few minutes between landings, so they used a lookout to call out to workers as the next plane began its approach. The emergency

repairs on the runway went on around the clock and made continuous landings possible. The teams worked unceasingly until the first of the new runways was completed.[78]

In the first week of July 1948, Col. Reginald Whitaker, engineer officer at the Berlin Military Post, received orders to build a new runway in Tempelhof. On 8 July work began on an airstrip that was to be 5,500 feet long and 140 feet wide. Two months later, on 8 September, planes began landing on the new runway. A third runway in Tempelhof, started on 23 August, opened in November.[79]

Even with the additional runways, the facilities in Tempelhof were not adequate to sustain the airlift. The airfield's location among tall buildings made landings difficult and dangerous. The recommended approach angle for landing aircraft was one vertical unit for every forty horizontal units. The best angle that could be achieved in Tempelhof was one to sixteen! The glide angle was so sharp that as a safety measure engineers dug a trench at the end of the principal runway so that planes overshooting it would sheer off their landing gear and thus slow down enough to prevent them from crashing into the administrative buildings.[80]

In addition to the liability of the glide angle, the facilities could not accommodate the high volume of air traffic. Because Gatow Airfield in the British sector could not be expanded, the pressures of the blockade made a completely new airfield necessary. An engineer team identified an appropriate site in the Tegel area of the French sector, near rail facilities and unobstructed by tall structures. The French agreed to let the Americans build, staff, and maintain a field for the duration of the Berlin Blockade. General Clay approved the construction of the new airport on 31 July 1948. Lt. Gen. Curtis E. LeMay, commander of the U.S. Air Force in Germany, set in motion plans to complete the new field by February 1949. When Clay learned of LeMay's projected date of completion, he sent a terse message: "I don't accept the February 1949 estimate for Tegel. It is much too long."[81] LeMay pushed the opening date to December 1948.

Very little heavy machinery was available in the city, so the engineers applied labor-intensive methods. Clay, who had observed the value of hand labor during a visit to China in 1943, put out an appeal for civilian workers in Berlin. Thousands of Berliners, men and women in almost equal numbers, responded by volunteering to work on the runways for a nominal wage plus one hot meal a day. At the peak of the activity some 17,000 people worked three shifts a day around the clock. Rather than laying a concrete base, because concrete was in short supply, the workers laid the equivalent of ten city blocks of crushed rubble and bricks left from the wartime destruction of Berlin. Between the start of work and the end of the year, German civilians put in almost 3 million worker-hours. The U.S. military managed this labor with 15 officers and 150 men assigned to Tegel.[82]

Even with the multitude that volunteered to work on the airfields, the engineers still needed heavy equipment for construction and to keep up with runway maintenance. The appropriate equipment was available in

Germany, but it was scattered. A call went out to the U.S. zone to send available tractors, graders, rollers, scrapers, asphalt distributors, crushing and screening plants, and generators to the engineer supply depot in Hanau. The engineers in Hanau disassembled the equipment to prepare it for transport. To fit larger items into the aircraft, the engineers sometimes had to cut the frames, so thirty engineers flew to Berlin, set up a reassembly shop, and welded the equipment together again as it arrived.[83]

One of the men who learned to operate that equipment was Lt. Norman G. Delbridge, Jr., a twenty-year-old from Michigan who had enlisted in the Army in 1946 after one year of university engineering studies. Fresh out of Officer Candidate School, Delbridge commanded a shift of workers in Tempelhof. Sgt. Joe Debco, a crusty World War II veteran engineer on the crew, taught Delbridge how to operate each type of equipment that arrived in Berlin. In 1949 Delbridge left the city to accept an appointment to West Point, where he graduated in 1953. In 1976 he returned as a brigadier general and commander of the U.S. Army Engineer Division, Europe.[84]

The heavy equipment—about forty pieces in all—arrived only after work began, but its impact on the pace of construction was dramatic. The second runway in Tegel, begun in March 1949 and completed after the blockade had been lifted, required fewer than 400 civilian workers to complete, in contrast to the 17,000 who worked round the clock on the first runways in Tempelhof.[85]

The engineers also shipped fire extinguishers, generators to light night operations, and tons of coal to Berlin during the blockade. Coal was sacked at the Rheinau Coal Storage Point, shipped by rail to Rhine-Main or to Wiesbaden air base, and then flown to Berlin. In late November 1948 a shortage of sacks temporarily slowed delivery to 100 tons a day; but beginning on 1 December, when more coal sacks became available, the engineers managed to load and ship 254 tons of coal a day, seven days a week.[86]

In mid-May 1949 the Soviets abandoned the blockade and reopened Berlin to land traffic, but the allies continued the airlift until September 1949 to build up stocks of goods. In fifteen months allied pilots made a total of 279,114 flights into the city carrying 2,323,257 tons of supplies, an average of one flight every two minutes and over 5,000 tons of supplies a day. Keeping West Berlin free cost the lives of 39 British and 31 American military personnel as well as 9 civilians.[87]

The Blockade and U.S. Forces in Austria

American military planners were acutely aware that Vienna, located within the Soviet zone of Austria, was as vulnerable to a blockade as Berlin.[88] Under the circumstances, the commander of United States Forces, Austria (USFA), Lt. Gen. Geoffrey Keyes, concluded that he had to reduce the number of personnel in Vienna and relocate them in the area of Austria occupied by U.S. forces, specifically in Linz and Salzburg.[89]

Pulling people back from the exposed position would reduce the number of people that could be held hostage in Vienna.

General Keyes tapped the engineers of USFA to execute the relocation from Vienna. In January 1949 the Army recalled Col. Hubert S. Miller, USFA engineer from 1946 to 1948, and assigned him to administer the emergency program to create housing for troops and dependents. The engineer organization under Miller consisted of area engineers in Vienna, Linz, and Salzburg who reported directly to him. This centralized structure served until the creation of post engineers under post commanders in July 1951.[90]

Near Salzburg and Linz, USFA found old garrisons for the troops to renovate and occupy.[91] Housing for dependents was much more difficult to find, but the Army identified the Bindermichl apartment complex just outside of Linz as one possibility. Its rehabilitation became an early example of the expanding role of the Army engineers in the changing atmosphere of Europe.

The Bindermichl complex had been built in 1941 by the Nazi steel conglomerate Reichswerke Hermann Göring to house the plant's workers. Originally it consisted of sixty-five connected blocks, rather like a series of row houses. Each block formed a three-story unit with six small apartments, one on each side of the stairwell at every level. After the war the U.S. Army took over the sixty-one blocks that had survived intact and passed them to the International Refugee Organization for housing displaced persons. The complex quickly became a lively center for black-market trade. When tensions began to mount during the Cold War, the apartments were put at the disposal of the Army.[92]

In early 1949 Colonel Miller created a special position and appointed Maj. William L. Starnes of his engineer staff as administrator for the Bindermichl properties. Starnes hired an Austrian firm to design the renovations and to advise on technical details once the project got under way. Colonel Miller persuaded the chief of engineers in Washington, Lt. Gen. Lewis A. Pick, to send several experienced Corps of Engineers civilian employees to Austria. The men were flown to Austria early in the project and contributed substantially to its ultimate success.[93]

Austrian contractors, selected on the basis of sealed bids, were to do the renovation and construction. Because the buildings had been German property, they were under the trusteeship of the Austrian government as a "German external asset." USFA removed them from trusteeship and established a German external asset fund of 9.72 million Austrian schillings (ATS) (about $971,899 at the official rate of exchange) to rehabilitate the apartments for American families. USFA also arranged to evacuate the displaced persons in phases, and Starnes put together a construction schedule to follow the pace at which apartments were vacated. The standard plan called for workers to break through the dividing wall behind the stairwell landing, thus joining the two apartments on each floor. (*Figure 1*) The resulting five-room apartment contained a living room/dining room combination, a large bedroom, a small bedroom, a kitchen, a

Figure 1: Converted Apartment in the Bindermichl Complex

storage room, a maid's room, and two bathrooms. Six apartments were specially modified for senior officers to provide more space and central heating.

The apartments and grounds were in a deplorable condition when vacated by the displaced persons. Black marketers had removed plumbing fixtures, stoves, and anything sellable; floors had been ruined; doors and windows, including frames, were often missing; over half the windows that remained were without glass; and trash, dirt, broken bottles, feathers, old clothes, shoes, and spoiled food soiled many apartments. Courtyards and common areas were even more depressing. Drainage had broken down completely, so that rain and snow produced a sea of mud. Wooden shacks, variously used by the inhabitants as small stores, workshops, supply huts, churches, and night clubs, littered the once-open courtyards. All of this debris had to be removed before renovation could begin.

The bids for renovating of the first block, which consisted of four apartment units, were opened on 10 February 1949, and work began within days. From that point to the completion of the project, Starnes and a staff of five supervised a steady cycle of contracting and construction. Each week contracts were signed for another group of buildings and work

was begun on them. The engineers applied experience gained in the first round of contract negotiations to subsequent rounds of bidding. The later contracts included interior parking areas, lawns, exterior sidewalks, fumigating the buildings before actual construction, built-in storage units for bedrooms and kitchens, and—through the USFA quartermaster—furniture for the finished apartments. The four apartments begun in February were completed two months later, and the first section of sixty-five apartments was finished in May.

By the middle of May 1949 all refugee residents had moved out and renovation of the rest of the apartments began at an intense pace. Indeed, the period from mid-May to early September became the busiest phase of the project. Cost-saving measures, combined with declining costs in the Austrian economy, meant that money stretched far enough to complete the project within budget. At one point, renovation was under way simultaneously in twenty-four blocks of apartments and two courtyards. The work involved about forty separate contractors. The American engineer supervisors relied heavily on Austrian engineers for inspections. Funds were dispensed at the rate of ATS 45,000 ($4,500 at the official rate of exchange) a day on construction and ATS 25,000 ($2,500 at the official rate) a day on furniture.

By the middle of July American families began moving into the available apartments at a rate of ten to fifteen a week, a pace that kept up with the construction crews' progress. The arrival of families meant contending with children and pets that found construction sites irresistible attractions. Apartment managers organized a Repair and Maintenance Section for the complex consisting of seven men and one foreman. The janitorial staff, which had begun with just a few men as the initial apartments were completed and furnished, grew to fifty men under one superintendent.

By the end of the construction phase the Army engineers had renovated and furnished 182 apartments and created a post exchange. Most of the apartments were occupied immediately. The bulk of the work was over by 15 November 1949; another twenty-four apartments were renovated in subsequent months. The work in the complex included parking spaces for 150 automobiles, landscaping for 3 lawn areas in courtyards, 5,500 square yards of sidewalk, and 10,000 square yards of concrete or asphalt road. The cost of the project by mid-November was just over ATS 10 million (about $1 million), with 90 percent coming from the German external asset account and the remainder from rent paid by families living in the complex. About 60 percent of the total spent was for rehabilitation and construction, with close to 30 percent devoted to apartment furnishings. The remaining money paid for landscaping and operating costs.

Even after the end of the Soviet blockade of Berlin, housing remained critically short for the U.S. Army in Austria. During 1949 and 1950 Colonel Miller arranged to house troops in the Salzburg province in facilities taken over from the International Refugee Organization. On three sites—Saalfelden, Sankt Johann, and Riedenburg— ATS 12.5 million was expended from a special account set up for the purpose. In March 1950

Miller arranged a program with the Austrian government that established the Housing Administration Trust account, a fund of ATS 130 million made available by the Austrian government and administered by Miller to construct new apartment houses. Over the next two years, contractors completed new apartments in Linz (68), Wels (38), Salzburg (272), Saalfelden (72), and Sankt Johann (16). The Austrian government put up the land and the money for these buildings but insisted that Austrian building codes be observed. The arrangement was a marked change from the era of occupation when the U.S. Army had been able to insist on American standards. Still, it was practical because, in return for its contributions, the Austrian federal government received title to the apartment units once the Americans no longer needed them.[94]

Standardizing Engineer Operations

The positive support in American public opinion for the airlift to preserve West Berlin did not prompt a reversal of the declining troop levels in Germany. Nor did the blockade change the mission and underlying activities of the engineers. Still, after four years of struggling to draw management of engineering activity into a central agency, the chief engineer's office had developed a set of procedures to standardize its operations. One sign of the change was how they calculated work. Until the stabilization of the German currency, paying an hourly wage in the vastly devalued German Reichsmark or in occupation marks had been impossible. After the introduction of the Deutschmark in June 1948, projects had to budget in worker-hours rather than in the money value for labor. In April 1949, for the first time since the occupation began, the Army engineers drew up their budget and projected their contracts for maintenance and construction in Deutschmarks using the cost per hour of labor. The establishment of an efficient German domestic market for goods also allowed the engineers to abandon their practice of furnishing to the contractor much of the material necessary for a job and to discontinue providing hot meals as an inducement to attract labor. By 1949 the marketplace had begun to take over some of these functions, and the conduct of business within the German economy by the chief engineer's office took on a semblance of standard practice.[95]

The German economy was by no means fully reconstructed, but recovery was clearly under way. In the German fiscal year beginning 1 April 1949 (fiscal year 1950), all projects contracted out by the Army engineers could be approved on a total-cost basis. Competitive bidding by German contractors became the norm; and in establishing guidelines for contracts, the chief engineer's office introduced such features as bonus-and-penalty clauses, leading to economies in construction and to earlier occupancy for the user.[96]

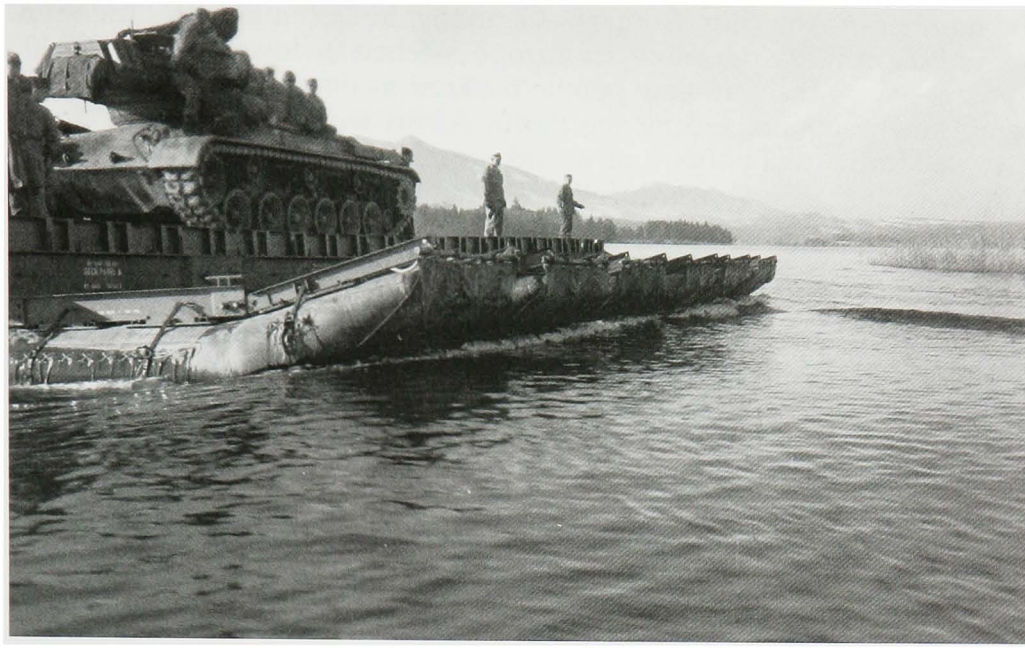
The chief engineer's office also made its technical authority felt in other ways. Drawing on the talents of its professional staff of engineers, the office assisted the post engineers in the most effective use of money,

labor, and supplies. For example, to enable post engineers to stretch the limited funds available for rehabilitation, the chief engineer's office developed standard plans for several types of dependent housing units, a measure to help reduce unit costs.[97]

The European Command used the experience of the chief engineer's office with techniques of financial management to enhance the engineer staff's central role. In 1948 Shingler's staff instituted cost-accounting procedures in engineer operations. In 1949 EUCOM extended the financial management system that Shingler's staff had implemented to the entire command, allowing commanders to match expenses to accomplishment, whether funding came from appropriated dollars or from the German government as part of the occupation obligations. The chief engineer also sent out accountants from his office to audit the records maintained by the post engineers.[98]

The chief engineer's office also extended its influence by providing assistance for facilities engineering. In the early years of the occupation, routine maintenance involving repair and utilities had been managed locally and executed by engineer units assigned to field commands (subsequently by the engineers of military districts). With the establishment and evolution of military posts in 1947 and 1948, post engineers took over the tasks related to maintenance, repair, and utilities.[99] By 1949 the chief engineer's office had refined its training program to help the local engineers establish a comprehensive maintenance program and allocated sufficient funds from their own budgets for regular maintenance and repair.[100] The new program for 1949 emphasized preventive maintenance to reduce repair costs. The teams trained by the chief engineer's office consisted of a carpenter, a plumber, and an electrician to inspect and repair each building on a three-to-four-month cycle. The program allowed the EUCOM Engineer Division to budget maintenance on a unit-cost basis—DM 0.186 per square foot per year for 1949.[101] For the German fiscal year 1949, the total budget for engineer costs of the occupation amounted to about DM 430 million. Of this, about 50 percent went to repairs and utilities. Most of the remaining budget went to real estate activities, major rehabilitation, and custodial services.[102]

Other activities took a small percentage of the budget, but they illustrate the areas in which the chief engineer's office established its position as manager and supporter of engineer activity throughout the European Command. For instance, starting in July 1948 the Office of the Chief Engineer in Heidelberg supported teams in each of the military posts to maintain the 5,500 pieces of engineer equipment in use throughout the command. These field maintenance teams, which included a master mechanic certified by EUCOM's chief engineer, could turn to the chief engineer's office for technical assistance. In addition, during 1949 the EUCOM Engineer School, supervised and staffed by the chief engineer's office, trained 561 Americans and 502 Germans as operators, construction equipment mechanics, diesel mechanics, welders, and utility repairmen. This training gave necessary personnel resources to the local command-



German and U.S. military personnel at the Engineer School in Murnau, Germany, learned engineering skills such as surveying and building bridges with ferries.

ers, who were responsible for the maintenance of engineer equipment. To supplement the local maintenance installations, the Office of the Chief Engineer prepared and issued a manual on field maintenance of engineer equipment and provided a maintenance assistance team, composed of personnel from the Hanau Engineer Depot, that visited each military post to assist and advise.[103]

The chief engineer's office found that from a strictly mechanical point of view, problems related to the maintenance of engineer equipment were minimal but other aspects of maintenance created difficulties. There was a critical shortage of spare parts, making timely repair difficult. The language barrier that divided American soldiers from the Germans and displaced Europeans who actually operated and repaired the equipment created misunderstandings and mistakes. German translations of instructions and schedules for maintenance services provided by the chief engineer's office were only a partial solution. More equipment was available in the field than could be effectively maintained by the people at hand. Lastly, field shops often attempted repairs beyond their capabilities.[104]

The engineer staff attached to the headquarters of the U.S. armed forces in Europe had moved from England to France to Germany in 1945 and from Frankfurt to Heidelberg in 1948. The name changed slightly with the reorganization of command in Europe, but the office's function remained the same. After 1945 the army of occupation progressively reduced its troop strength. Not even the blockade of Berlin interrupted the decline in

the number of American troops in Germany. In December 1949 the number of U.S. military personnel in Europe reached its lowest point—83,400 soldiers—since the war. Few people realized as events unfolded that the commitment symbolized by the Berlin Airlift would become the dominant determinant of policy and would override in succeeding decades the American inclination toward military disengagement from Europe.

By the end of 1949 the mission of the U.S. Army in Europe had shifted dramatically. In early 1945 combat had driven all American military decisions. After Germany was defeated, military leaders concentrated on the peacetime occupation and the need to maintain order. As the decade ended, combat readiness and rapid response to outside challenges supplanted static occupation duties. With its West European allies, the United States prepared to meet possible aggression against Western Europe by the Soviet Union.[105]

PART TWO

FOR A COMMON DEFENSE
1950–1973

INTRODUCTION

In the summer of 1948, encouraged by the Truman Doctrine, the Marshall Plan, and President Truman's initiatives to reinstitute conscription, Britain, France, Belgium, the Netherlands, and Luxembourg entered discussions with the United States that led to the signing in April 1949 of the North Atlantic Treaty and the establishment of the North Atlantic Treaty Organization (NATO). In addition to the United States and the five countries that had initiated the discussions, Italy, Norway, Denmark, Iceland, Portugal, and Canada also signed the treaty. (*See Map 5.*) The key provision of the pact was that each signatory agreed to treat an attack on any member state as the equivalent of an attack on its own soil and to render military assistance accordingly.

The establishment of NATO marked the recognition by West European statesmen, and the acceptance by American policymakers, that only the United States could counterbalance the power of the Soviet Union in Europe. The Europeans also realized that an alliance led by the United States would be based on consensus among independent, sovereign, and free states, whereas one dominated by the Soviet Union would involve coerced agreement.

NATO applied to Western Europe, but the next crisis of the Cold War occurred in Asia. In June 1950 the Soviet client state of North Korea attacked South Korea across the political line of demarcation that had divided the Korean peninsula since the end of World War II. Only American armed intervention saved South Korea from being overrun.

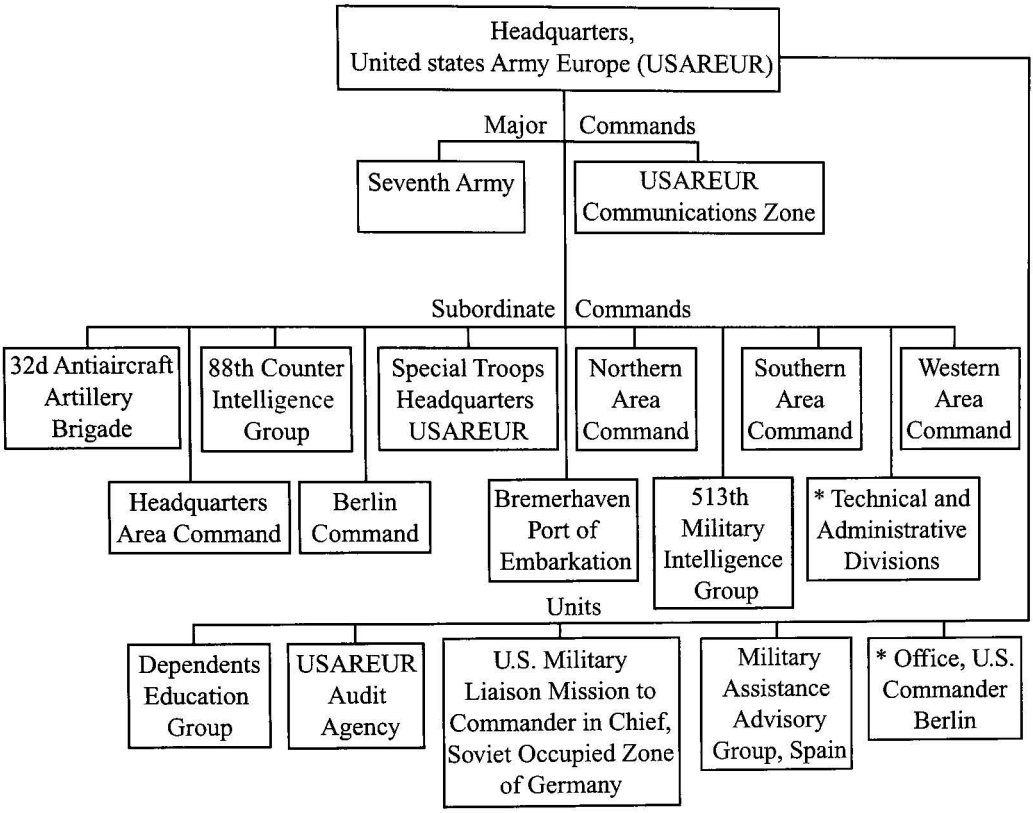
In the face of what they saw as open Communist aggression, the signatories of the North Atlantic Treaty underlined their determination to defend Western interests by creating a military command for NATO. In December 1950 the United States proposed and the North Atlantic partners accepted General Dwight D. Eisenhower as Supreme Allied Commander, Europe. Over the next several months Eisenhower established the Supreme Headquarters Allied Powers Europe (SHAPE) near Paris. Its mission was to defend the territory from the North Cape in the Arctic Ocean north of Norway to northern Africa and from the Atlantic coast of Western Europe to the eastern borders of Turkey.

Because SHAPE initially had no international funding, U.S. funds and support were channeled through the European Command in Heidelberg, which furnished budgeting, funding, and accounting for all of the national military elements. As units were assigned to NATO, the United States reorganized its own military headquarters in Europe to clarify lines of authority. In August 1952 the Joint Chiefs of Staff activated a new command, U.S. European Command, to coordinate American

ICELAND
NORWAY
North Sea
UNITED KINGDOM
DENMARK
NETHERLANDS
BELGIUM
LUXEMBOURG
FRANCE
ITALY
PORTUGAL
Corsica
Sardinia
Sicily
EUROPEAN SIGNATORIES
NORTH ATLANTIC TREATY ORGANIZATION
April 1949
European Signatories
Postwar Germany
Future Boundary between East and West Germany
0
500 Miles
0
500 Kilometers

Map 5

Chart 1: Headquarters, U.S. Army, Europe, 1953



*Staff Divisions of Headquarters USAREUR having certain assigned and attached units under the command of the respective heads of divisions: Adjutant General, Provost Marshall, Special Activities, Armed Forces Information and Education, Finance, Chemical, Engineer, Medical, Ordnance, Quartermaster, Signal, and Transportation.

support for SHAPE-NATO and to serve as the joint command for U.S. Army, Navy, Marine Corps, and Air Force personnel and activities in Europe.[1] What had been the European Command was redesignated on 1 August 1952 as United States Army, Europe (USAREUR), responsible for all functions related to the Army. (*See Map 6.*) Headquartered in Heidelberg, USAREUR took command of a small NATO planning unit, the Central Army Group, and operated through the Northern, Southern, Western, and Headquarters (Heidelberg area) Commands in Germany and the Communications Zone in France. (*Chart 1*) The Europe Command and its successor USAREUR also provided logistical support to other agencies, including the American elements of NATO forces, the United States Air Forces in Europe, and Military Assistance Advisory Groups in Europe and the Middle East.[2]

Implementing a policy of common defense for the signatories of the North Atlantic Treaty stimulated military construction on a scale that Army engineers had not known since World War II. Whether in Greece,

U.S. ARMY, EUROPE
WEST GERMANY
1 December 1952
Area Command Boundary (approximate)
District Boundary (approximate)
Area Command Headquarters
0 50 100 Miles
0 50 100 Kilometers
NETHERLANDS
Bremerhaven
Hannover
BERLIN
BERLIN
Elbe R.
EAST GERMANY
Leipzig
Dresden
Kassel
Erfurt
Rhine R.
FRANKFURT DISTRICT
WIESBADEN MILITARY POST
NORTHERN AREA
Wiesbaden
Frankfurt
CZECHOSLOVAKIA
WÜRZBURG DISTRICT
Bamberg
Würzburg
Pilsen
WESTERN AREA
NUREMBERG DISTRICT
Kaiserslautern
Heidelberg
Nuremberg
HEADQUARTERS AREA
Regensburg
Karlsruhe
STUTTGART DISTRICT
Stuttgart
SOUTHERN AREA
MUNICH DISTRICT
Augsburg
AUGSBURG DISTRICT
Munich
GARMISCH DISTRICT
Garmisch
FRANCE
SWITZERLAND
AUSTRIA

Map 6

Turkey, Austria, Germany, or France, the fundamental responsibility of the Army engineers remained to expand the tactical and the support facilities necessary to meet the new American role.

3

DEFENDING THE WEST 1950–1953

The contest taking shape between the United States and the Soviet Union was a global struggle that involved Europe as one arena of conflicting interests. The United States' policy of containing Soviet expansion reached beyond traditional European boundaries to the eastern Mediterranean and Turkey. President Harry S. Truman included Turkey in his speech of March 1947 and made the country one focus of Western defense against communism. The North Atlantic Treaty Organization (NATO) included Turkey and Greece in its area of mutual defense and admitted them into the alliance in 1952.

The Berlin Blockade focused attention on Germany as the land in contention. In great measure the blockade had been the Soviet reply to an initiative to establish local government on a liberal democratic basis in the three zones in western Germany. The United States, Great Britain, and France had encouraged the Germans to draw up a constitution, hold elections, and create a representative government. The process culminated in September 1949 with the formation of the new Federal Republic of Germany. The Soviet Union responded with the declaration of a competing state, the German Democratic Republic, officially established just a month later.

All these events created a political framework for the presence of the U.S. military in Europe that was vastly different in 1950 than it had been in 1945. Beginning in 1950 the Army engineers had to develop airfields in Turkey and the support facilities to make flights from these bases possible. In Germany, they scrambled to find and construct facilities to accommodate the dramatic increase in troops stationed in there, an influx that also increased the need for dependent housing and support facilities. At the same time, the Army engineers had to adjust to the end of the occupation regime and to West Germany's gradual assertions of autonomy, factors that influenced both the financing and the execution of military construction. The new relations translated into projects whereby the engineers contributed to the improvement of German communities in which

the soldiers lived and worked. To protect against possible Soviet aggression from Eastern Europe, the European Command (EUCOM) also had to reconsider its lines of communication and logistical support. Adjusting the lines of communication stimulated more military construction for the Army engineers.

The Troop Base in Germany

The outbreak of the Korean War in late June 1950 profoundly shocked Europeans. They were acutely aware of the similarity between divided Germany and divided Korea. In September 1950, with the North Korean attack fresh in their minds, representatives of the NATO states met in New York and announced that they would consider any attack on the new West German state or on West Berlin as an attack upon themselves. They unanimously adopted a resolution that called for an integrated military force under a unified allied command to defend Europe. They also announced that they would increase the number of allied and U.S. military forces in Germany and position them without regard to zonal lines.[1] This declaration—that the Western Powers in the coalition to defeat Germany just five years earlier would now defend the fledgling West German state—illustrated the dramatic changes in political conditions in Europe between 1945 and 1950. To accommodate the new strategic situation, the three Western Powers agreed to relinquish their military rights under the occupation regime and accorded the year-old Federal Republic of Germany the right to maintain their troops in Germany by invitation.

The new situation required the Western alliance to convert its military presence in Germany into a credible defensive force capable of repulsing an attack from the east. To achieve this status, the number of troops in EUCOM—by 1949 reduced to around 80,000 combat soldiers—had to be increased. Early in 1950 the Department of the Army authorized increases for Europe to take place late in the year and throughout 1951. The command anticipated a troop basis of 164,000 in four divisions plus support units, a figure that was surpassed in the first year. Troop strength almost tripled during 1950 and 1951; total military strength in EUCOM increased from 106,610 to 255,721.[2] The personnel receiving support from EUCOM or United States Army, Europe (USAREUR), during 1950–1953 rapidly increased as the U.S. military expanded its presence and assumed its NATO responsibilities. Only among European civilian employees of the U.S. forces did the numbers decline substantially. (*Table 1*)

In September 1950 the commander in chief of EUCOM, General Thomas T. Handy, asked the Joint Chiefs of Staff to mobilize a field army to command the additional troops. The Seventh Army, activated early in the autumn of 1950 as part of the overall plan to establish an effective NATO fighting force in Europe, set up headquarters in Stuttgart-Vaihingen.[3] By 1 December 1950, the Seventh Army, headed by Lt. Gen. Manton S. Eddy, became the first fully operational American field army to exist in Germany since February 1947. General Eddy assumed the opera-

Table 1

Personnel Receiving European Command Support
1950 and 1953

Personnel	1 Jan 50	30 Jun 53	Change	Percent change
U.S. Army	83,394	215,242	131,848	158
U.S. Air Force	19,244	37,453	18,209	95
U.S. Navy	400	1,115	715	179
U.S. civilian employees	6,681	6,257	–424	–6
European civilian employees	1,405	269	–1,136	–81
Labor service troops	22,664	26,449	3,785	17
Dependents	40,616	78,709	38,093	94
Total	174,404	365,494	191,190	210

Source: Historical Division, HQ USAREUR, "The U.S. Army Construction Program in Germany, 1950–1953," prepared by George Tays, p. 12.

tional authority of USAREUR over all Army units within the European Command. By the end of 1951 the Seventh Army contained two active corps—V Corps and VII Corps—with a total of five divisions. Between late 1950 and 1952 USAREUR continued to exist as the Army's administrative command under EUCOM. Unlike the Seventh Army, the Twelfth Air Force remained independent of EUCOM, answering directly to the Department of the Air Force in the Department of Defense.[4]

Within the new command structure the engineers continued to operate as an element of the EUCOM general staff, but in a reduced status. When Brig. Gen. Don G. Shingler left his position as chief engineer in November 1949, troop levels in EUCOM had fallen below 100,000 and the position was downgraded. Shingler's successor was Col. Willis E. Teale, who served as EUCOM staff engineer from 1949 to 1952. Only in the mid-1950s, after the substantial buildup of troop strength to around 250,000, did EUCOM again designate the position for a one-star general officer.[5]

The American Zone in Germany

No command-wide construction program of any significant volume existed in EUCOM before the augmentation of troops began in late 1950. For several years the Engineer Division of EUCOM headquarters had engaged primarily in rehabilitating buildings and executing routine maintenance and repair. It had begun a modest program to construct family

housing in 1949. By the beginning of 1950 the need to expand construction to accommodate the changing requirements of the occupying forces clearly called for changes in the management of engineer activity.[6] American military supplies stored in vulnerable positions near the borders of East Germany and Czechoslovakia had to be shifted to more tenable locations west of the Rhine to make them more secure and to shorten lines of supply. Both the repositioning of supplies and the increase in troop strength involved the Army engineers of the European Command in planning and executing major building programs.

In April 1950 EUCOM set up a planning board to oversee the construction projected to accommodate the imperative to return requisitioned property to the Germans. Representatives from the relevant EUCOM headquarters divisions—Seventh Army, Twelfth Air Force, and Naval Forces Germany—served on the board and set general guidelines for the construction program. In May the EUCOM Engineer Division took construction out of its Operations Branch and established a Construction Branch. The Operations Branch retained the responsibility to draw up, review, keep current, and approve specifications for construction and to establish policies, procedures, and standard specifications for the types of buildings under consideration.[7]

Once the Operations Branch had processed guidelines formulated by the planning board and approved by the EUCOM chief of staff, the plans moved to the Construction Branch. Projects then passed to the appropriate post engineers, who let the contracts and managed the construction. The Construction Branch supervised the execution of the contracts and set up inspection teams to aid post engineers in obtaining satisfactory work from contractors in the field.[8]

For several months after the reorganization in 1950, one person commanded both the Operations and the Construction Branches; but construction activity intensified with the outbreak of the Korean War and the anticipated augmentation of troop strength in Germany. As a result, EUCOM assigned Col. David H. Tulley to take charge of the Construction Branch in August 1950, a post he held for nearly two years. Contemporaneously, the Department of the Army assigned twelve engineer specialists to Tulley on temporary duty to equip EUCOM's engineer staff to deal with the increase in construction. The department also authorized him to hire fifteen civilian engineers.[9]

The occupation statutes stipulated that Germany pay all costs of maintaining the U.S. forces, but the new partnership between the United States and West Germany made new arrangements imperative. During the early years of occupation, the Army had requisitioned private homes and state properties. American officials proposed that the German government now pay instead the costs of constructing new facilities. EUCOM formulated a five-year budget for construction that the U.S. high commissioner, John J. McCloy, presented to the German Ministry of Finance. The Federal Republic agreed to fund the construction as a long-term capital investment in real property that would revert to German use when the

Americans vacated it. EUCOM agreed to submit budgets yearly through the high commission to the West German government.[10]

As the building program got under way, German federal and state construction agencies raised objections. U.S. Army engineers, they complained, were cutting them out of the planning and bidding processes and dealing directly and exclusively with private German contractors. During the summer of 1951, American military leaders, West German government authorities, and the U.S. high commissioner held talks to work out procedures to include the German Government Construction Agency (*Deutsche Bundesbauverwaltung,* or *DBBV*) in the solicitation of bids and in negotiating with German firms for design and construction. Over the next several years the practice of including the *DBBV* in the contracting process formed the basis of the contracting system, dubbed indirect contracting, that evolved after the Federal Republic attained full sovereignty in May 1955. In the early 1950s a series of bilateral agreements between EUCOM and the new West German government left the major part of U.S. military construction under Deutschmark (DM) funding.[11]

Including German government agencies in the process of design and in construction programs represented a precedent-setting step in adjusting relations between the United States and the new Federal Republic. Equally as innovative, the Germans began formally to propose alternatives when the Army requested use of a facility. As early as 1949 associations of citizens and communities had offered to finance and build housing for American military families in exchange for the return of requisitioned homes to their German owners.[12] The practice continued on an informal basis throughout the 1950s, and it eventually grew into a major program labeled alternate construction.

Troop Housing

The impending influx of Army officers and soldiers posed the most immediate concern for EUCOM's commander, General Handy, in 1950. Handy proposed a four-part program to alleviate the prospective housing crisis. He wanted an increase in the density of troops in existing casernes, the immediate rehabilitation of all available casernes, an accelerated turnover of casernes still held by the International Refugee Organization, and the rapid construction of semipermanent barracks facilities.[13] To ensure space for the arriving soldiers, McCloy directed the West German government to make available eleven casernes in the U.S. zone by 1 November and another twenty-five by 1 December. McCloy's directive hastened the German government's plan to move the displaced persons out of the casernes. Speeding up the process gave the construction crews more time to repair and rehabilitate the facilities before troops began to arrive in 1951.[14]

Handy charged three separate elements to cooperate on planning, setting priorities, and executing the construction needed to accommodate the augmentation of forces. The three elements included the director

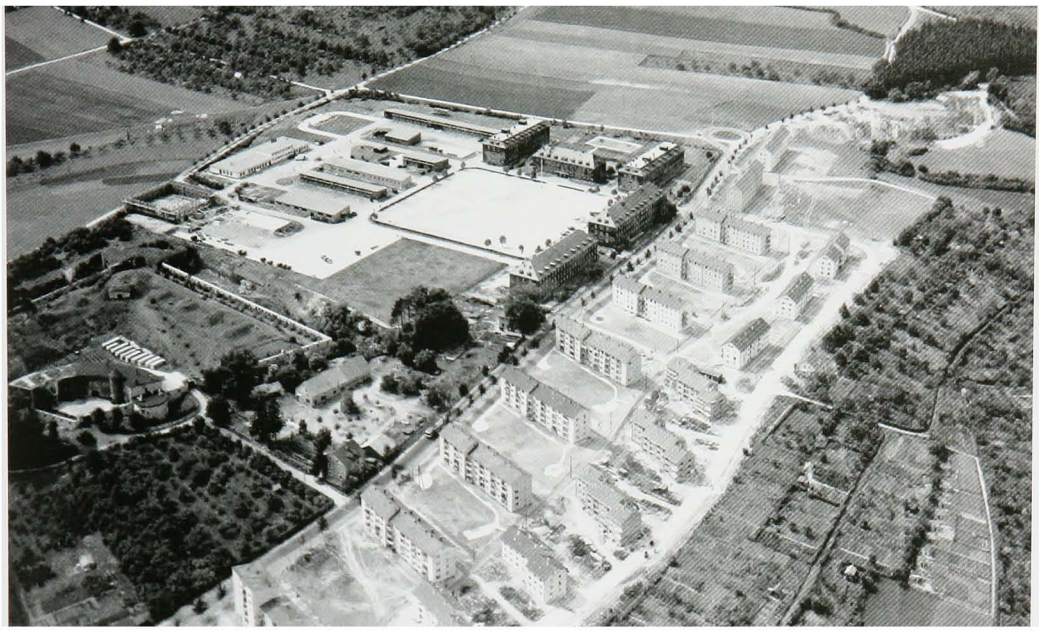
of logistics (G–4), the Construction Branch of the EUCOM/USAREUR Engineer Division, and the Logistics Division planning board that Handy had established in early 1950. The director of logistics was responsible for the overall plan of construction for the command. The planning board prepared forecasts, reviewed requirements for projects submitted by the military posts, settled priorities and locations for construction, and prepared the yearly construction budget submitted to the high commissioner for transmittal to the Federal Republic.

The EUCOM/USAREUR staff engineer, Colonel Teale, was responsible for establishing work procedures and specifications for projects. The Engineer Division approved projects, construction contracts, and construction budgets coming from the military posts. It provided detailed technical and administrative procedures for construction activities and prepared a master plan.[15] Teale was the nominal superior to Colonel Tulley, who commanded the Construction Branch of the Engineer Division, but Teale was ineffective. The newly arrived Communications Zone (COMZ) commander in France described him as "a sad-sack [who] has slipped immeasurably." Under the circumstances, EUCOM's chief of staff, Maj. Gen. Daniel Noce, an engineer officer, instructed Tulley to take charge of the construction program and to report directly to him while keeping Teale informed.[16]

With Noce's active encouragement and support, Tulley visited every military post commander to explain the intensified construction mission and to get authority to deal directly with the post engineer on construction matters. Tulley also instituted emergency construction procedures. These emergency procedures specified that the bidding process include a minimum of three contractors and that the post engineer give contractors a tour of the project site, provide a written description of the project, and solicit a lump-sum proposal from each contractor. Provided that a post engineer observed these steps, the emergency procedures gave him authority to initiate contract negotiations and award the contract to the lowest bidder. By reducing paperwork and levels of approval, the procedure increased the tempo of activity and shortened the time it took to rehabilitate a caserne from six to four months.[17]

To facilitate coordination, troop units deploying from the United States sent advance parties to Germany to consult with the Construction Branch concerning their anticipated requirements. This practice established sound relations between the engineer staff and the eventual users of facilities, which persisted once the units arrived on site.[18] Post engineers organized their staffs into branches for real estate, repairs and utilities, construction, and troop supply and field maintenance. The post engineer offices drafted their requirements and submitted plans to the Construction Branch of the EUCOM Engineer Division, which incorporated individual post projects into a master plan. Each project was identified as either new construction or rehabilitation, but projects from both categories progressed simultaneously.[19]

When Handy issued his guidelines in September 1950, U.S. forces held about 100 former German army casernes. In addition to the facili-

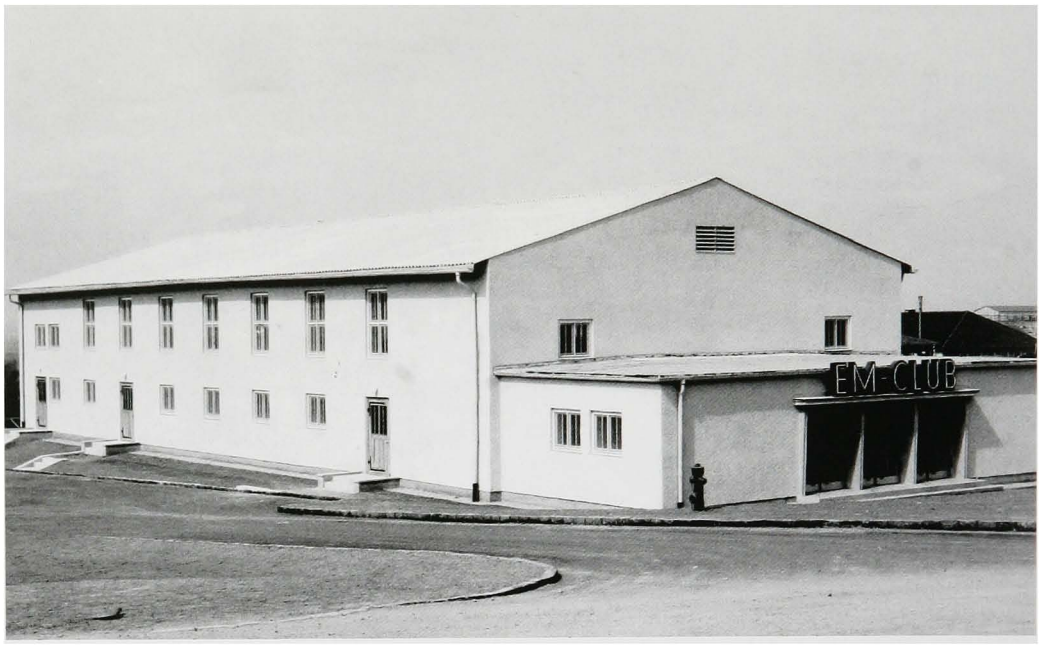


In the early 1950s, U.S. troops moved into the refurbished Reinhardt Caserne in Neu Ulm, near Augsburg.

ties provided by the German government, EUCOM received facilities from French occupation forces in their zone west of the Rhine, from the International Refugee Organization, and from the U.S. high commissioner for Germany.[20]

In February 1951 EUCOM headquarters requested through the Office of the High Commissioner that the German government make available for incoming troops fifty-two additional casernes located in the U.S. military posts of Augsburg, Frankfurt, Heidelberg, Garmisch, Munich, Nuremberg, Stuttgart, and Würzburg. In March and April EUCOM requested still more casernes. Simultaneously, EUCOM engineers proceeded to rehabilitate the casernes already under American control. Of the 158 casernes and other installations under reconstruction in 1951, 80 were completed and occupied by the end of the year. During 1951 and 1952 EUCOM obtained 169 additional casernes from the Germans, all of which the command engineers rehabilitated and repaired using German contractors. The contractors qualified through a standardized bidding process managed at the local level by the post engineers with the participation of the Engineer Division in EUCOM headquarters.

Concurrently with rehabilitation of casernes, the engineers managed construction of tent camps and cantonments designed to accommodate troops while more permanent facilities were being completed. Wildflecken, thirty miles north of Schweinfurt, received one of the first tent camps, constructed between 8 January and 10 April 1951 at a cost of



Despite austere guidelines for housing construction in 1952, Army engineers did build some amenities, including this enlisted men's club in Pirmasens.

more than DM 5 million. A camp for 20,000 men served as a staging area for arriving troops after it was constructed at Sandhofen near Mannheim in the summer of 1951. Similar camps were put up near Mainz, Fulda, Giessen, and Baumholder in the French zone.[21]

In Grafenwöhr, the training area thirty-seven miles northeast of Nuremberg, an 8,000-man winterized tent camp constructed during 1951 remained in use well into 1952. In Bremerhaven, construction on a 5,000-man temporary tent camp used as a staging area for arriving and departing troops began 9 June 1952 and was completed on 1 December. All together the engineers supervised construction of nine tent camps in Germany between 1950 and 1953.[22]

The engineers also experimented in Grafenwöhr with another type of construction to house a division for year-round training. They used pumice stone for exterior walls and corrugated iron for roofs. Conceived as semipermanent and designed for rapid, inexpensive construction, the experimental buildings proved more economical than tents, because they cost less to maintain and could be upgraded for longer-term use. The buildings also improved sanitation. By June 1953 the engineers had used concrete or pumice block construction on twenty-three cantonments.[23]

The engineers installed the utilities and services necessary to support these developments. In Grafenwöhr, for instance, where the Army's building program erected 250 structures in 1950, the engineers also constructed a reservoir and ten miles of sewer and water lines, installed water heat-

ing units to furnish hot water on demand, and provided a system of new hard-surface roads. The cost of rehabilitation, cantonments, and tent-camps came to DM 832,683,600, the equivalent of $198.3 million, which represented 35.2 percent of the total spent on all types of construction in Germany between 1951 and 1953.[24]

None of this construction was luxurious by any measure. Standard allowances under emergency regulations permitted about 100 square feet per person in barracks, one showerhead per 20 men, one toilet for each 15 to 20 men, and one 2-foot urinal trough per 20 men. Post surgeons recommended that window and door screens, largely unknown in German buildings, be installed to keep insects out of medical dispensaries, kitchens, mess halls, and other selected facilities.[25] Army austerity occasionally proved penny-wise and pound-foolish. Despite warnings from the Germans, the Army engineers decided to save money by not applying stucco to troop barracks in Baumholder, relying instead on a cement slurry. When wind-blown rain arrived with gale force and penetrated the walls, it gave "the appearance of a shower bath" to interior rooms. Embarrassed, the engineers applied stucco.[26]

As of September 1953, USAREUR controlled 282 Army and 16 Air Force installations in Germany with a total capacity of about 406,000 beds. At that time the facilities housed only about 329,000, including labor service troops and other nonmilitary personnel. To use all of the available spaces, commands would have had to split military units, undermining their tactical integrity. The apparent surplus of spaces also included unusable facilities and hundreds of requisitioned facilities scheduled to be returned to the Germans.[27]

Bachelor Officers' Quarters

Although a less pressing priority, building bachelor officers' quarters (BOQ) proceeded at the same time as the barracks. The command received approval for construction of the first 6 BOQ buildings on 13 December 1950; more were authorized in February. Construction began in April on 12 buildings of 68 rooms each: 4 in the Heidelberg region; 2 each in Heilbronn, Kaiserslautern, and Stuttgart; and 1 each in Mannheim and Ansbach. By July construction was under way at another 5 buildings, and the list of cities extended to Nuremberg. Six BOQs were completed by the end of 1951, providing 408 spaces. In March 1952 the director of EUCOM's Logistics Division proposed constructing an additional 52 BOQ buildings with 2,448 spaces, half of them for the Air Force; a month later he recommended that 8 buildings be added to the plan. Sites were added in Munich, in the Western Area Command west of the Rhine, and in Schwäbisch Gmünd, Würzburg, Schweinfurt, Bamberg, and Amberg.[28]

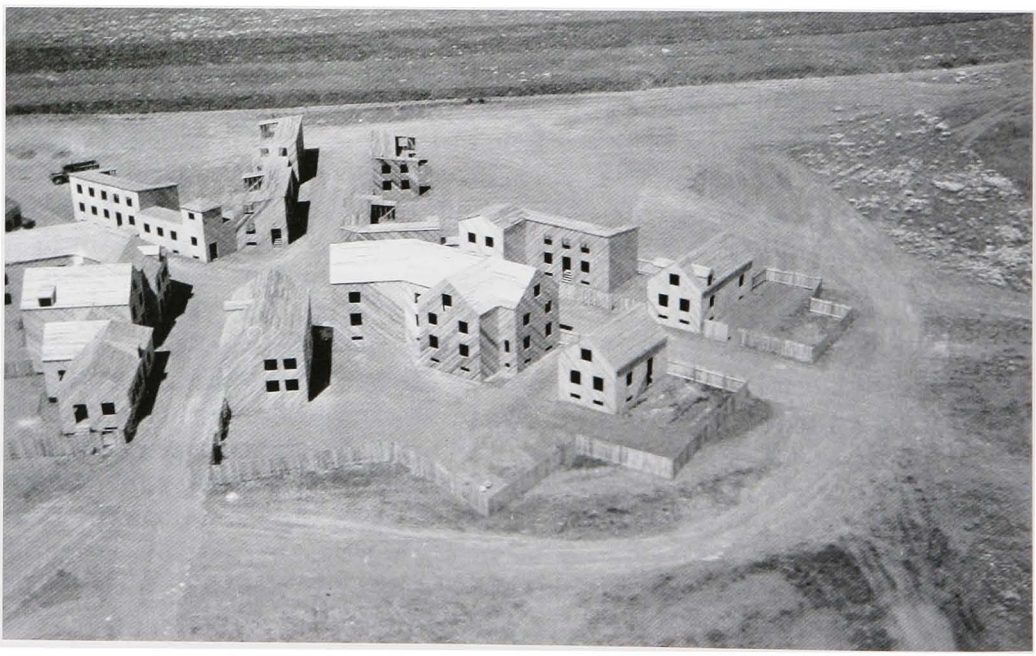
In the period from 1 April 1950 to the end of June 1953, the Army engineers supervised completion of 4,914 BOQ spaces at a cost of DM 53.9 million (the equivalent of $12.8 million). USAREUR still needed 12,300

more spaces. Moreover, many of the facilities in use as bachelors' quarters were in family structures or located at a great distance from duty stations. Thousands more spaces were earmarked for derequisitioning once West Germany achieved full sovereignty, factors that increased the overall need.

The task of providing BOQ housing became more complicated when a problem arose with the existing standard designs. The four-story design used during 1950–1953 exceeded USEUCOM's new regulations for floor space per occupant. The two-story structures, while meeting the revised regulations, took from two to two-and-a-half times as much land area per person as the four-story structure. Moreover, German authorities objected to constructing them in urban areas because they considered the semipermanent cantonment design and corrugated roofs aesthetic eyesores.[29]

Troop Training Facilities

The augmentation of U.S. forces also imposed new requirements for troop training facilities. Even with the acquisition of Wildflecken in 1949 to supplement Grafenwöhr, the terrain limited action to regiment-size units. The Seventh Army needed space to train division-size units. In October 1951, after long negotiations with the Federal Republic, the Army secured the use of an area near Hohenfels, southeast of Nuremberg. Initially about thirty-eight square miles, this area could eventually be expanded to seventy-three square miles. Further removed from the Czechoslovakian border than Wildflecken and Grafenwöhr, Hohenfels



Facilities constructed near Hohenfels in 1951 included this mock village for special training.

was less vulnerable to sudden attack from the east and a less provocative location for large-unit training maneuvers.[30]

EUCOM had also entered discussions with the French to use jointly a large training area in Baumholder in the French zone west of Kaiserslautern. In March 1951 the two powers reached an agreement that allowed U.S. tanks and artillery to exercise in the area during specified periods. A part of the agreement provided that the Americans would build semipermanent camp facilities and permanent facilities for about 500 soldiers, in addition to training facilities for use by soldiers from both nations.[31]

During 1952 EUCOM had major projects for construction or modification of training facilities active at five sites and smaller projects at over eighty locations in fifty different terrains in the French, British, and American zones.[32] In Grafenwöhr, construction involved firing ranges for weapons from pistols to antiaircraft artillery, roads, hardstands for trucks and tracked vehicles, permanent quarters for 15,000 men, and concrete-floored tents for another 7,000 soldiers. In Hohenfels, the construction plan provided for thirty-two ranges of various types; accommodations for 17,000 men (10,000 in semipermanent quarters and another 7,000 in a tent camp); a railroad terminal at Parsberg, about eight miles away; and surfaced roads from the terminal to the training area. By 30 June 1953, EUCOM had put over DM 35 million ($8.3 million) into the construction in Hohenfels.

More building went on in Wildflecken. Army engineers oversaw rehabilitation of facilities for 5,000 soldiers, upgrading of a 90-mm. stationary tank firing range, and construction of 30,000 square feet of hardstand. During 1951 and 1952 in Baumholder, EUCOM constructed permanent housing for 10,500 troops; semipermanent quarters for another 3,000; and firing ranges, roads, and courses for rocket launchers, rifle grenades, hand grenades, and close combat training. By 30 June 1953, EUCOM had spent about DM 17 million ($4 million) on construction in the Baumholder training area.

Late in 1952, by agreement with the British, EUCOM acquired the use of Todendorf, located in the British zone about 125 miles northeast of Bremerhaven. At this site, the Army engineers built firing ranges for tanks, a firing range and training area for antiaircraft units, and a semipermanent camp.[33]

These major areas dedicated to troop training, plus the eighty-two other small ranges and lesser facilities, cost about DM 93.3 million ($22.2 million) between 1 January 1950 and 31 January 1953. This type of construction was particularly amenable to troop labor, and engineer troop units participated extensively, giving them training, speeding construction, and reducing the cost in Deutschmarks.[34]

Dependent Housing

During the early years of the occupation, American military construction in Germany, financed by the Germans as part of the cost of occupa-

tion, emphasized facilities for combat troops. Although dependents were permitted into the theater after April 1946, construction to accommodate them had been largely limited to rehabilitation and maintenance of existing facilities. Before 1950 only 324 new family units were built for military personnel; most military families lived in requisitioned or confiscated facilities—that is, private residences, including both houses and apartments. In 1950 American families, single officers, and civilians remained in possession of 20,000 units of housing scheduled for return to their German owners. The dramatic augmentation of troops in Germany and the concomitant increase in the number of dependents created an urgent problem for EUCOM. As requisitioned facilities were returned, housing needs became even more acute.[35]

By late 1950 the modest building program begun a few months before the outbreak of the Korean War had been overwhelmed by the changes in military planning, and EUCOM faced a critical shortage of housing. EUCOM was responsible for a long list of American civilians, including employees of *Stars and Stripes*, the Armed Forces Network, the dependent schools, EUCOM Central Welfare Fund, the American Red Cross, Douglas Aircraft Corporation, International Business Machines, the Esso Export Corporation, American Express, and other organizations that had some official service-related role.[36] To accommodate the large number of eligible persons, the command placed arriving families in transient hotels or recreation centers in Bad Morgentheim and Bad Kissingen, both in the Würzburg area, and in Chiemsee near Munich.[37] During 1951 and 1952

By the early 1950s, facilities in Bremerhaven for troops, dependents, and supplies included family apartments and a theater.

Engineers used ribbed-concrete floor construction for housing in Mannheim, Germany.

dependent housing took 25 percent of the construction budget in Europe. This was substantially less than the 56.5 percent that went into troop housing and training facilities in the same period, but almost three times more than the next-largest category, which included shops, technical service facilities, and depots (9.1 percent).[38]

At the outset of the new construction program, EUCOM had no standard plans or criteria for family housing units, so the command's Engineer Division drew up plans. Because the United States agreed to turn the new buildings over to the Germans when no longer needed to support U.S. military personnel, officials insisted that twelve-unit buildings be designed for easy conversion into eighteen apartments.[39] Later designs had four stories rather than three, included sixteen to twenty-four family units rather than twelve, and offered somewhat smaller quarters (1,215 square feet as opposed to 1,371 square feet). The later designs incorporated a different roof and a different arrangement of kitchens, bathrooms, and quarters for domestic help, making them more economical to build. All building types were designed as permanent construction, with basements of reinforced concrete, exterior walls of hollow pumice blocks, and interior walls of brick. The floors were concrete with a parquet hardwood overlay.[40]

Although the command scheduled slightly more than 4,000 apartment units for construction during April 1950–March 1951 (corresponding to the German fiscal year), by September 1950 it became clear that EUCOM would

need another 4,000 units. In early 1952 another 5,000 units were added to the plans. The engineers hastened to capitalize on the availability of Deutschmark funding before West Germany's pending sovereignty ended the country's obligation to pay reparation costs, including construction. Translating the resolve into action meant that the building plan for dependent housing was revised several times during 1952 and the first half of 1953 to include as many projects as possible. By 30 June 1953, EUCOM engineers had supervised the construction of just over 17,000 family housing units. (*Map 7*) In addition, between July and October 1953, Army engineers built about 2,000 units for Air Force and Navy personnel.[41]

The Helping Hand Program

Not all the engineer activity during the augmentation of U.S. forces benefited only the military. The soldiers themselves worked in a program labeled Helping Hand—part training, part community relations. In 1953 alone Helping Hand involved an estimated $500,000 of work that was in effect donated to German communities.[42]

Wilhelmsfeld, a small community near Heidelberg, profited from a Helping Hand project. The community wanted a sports field and playground for its young people. The community had land available, but clearing and leveling the terrain with traditional German hand labor would have taken more time and money than the local government could afford. Through a U.S.-German advisory council set up at the military post to improve relations, the town requested the help of the Army engineers.[43] In March 1951 personnel of the 77th Engineer Construction Battalion and the Engineer Field Service Center took heavy earthmoving equipment into the forest at the edge of the town. The soldiers moved thousands of tree stumps and tons of earth, working through Good Friday to the surprise (and probably the chagrin) of the Germans. On Saturday evening, with the work completed, the townspeople held a festival-celebration for the Americans. The local choral society sang, children performed, and town leaders bestowed honors on the men who had helped make their sports field a reality.

A more ambitious and far-reaching project took place in 1952 and 1953 in Weingarten, a small community east of Karlsruhe and south of Heidelberg. The local government asked a unit of the 39th Engineer Group stationed in nearby Ettlingen to resculpt the farmland near the town. For generations the land had been subdivided among family heirs successively; small plots divided by hedges and shrubs severely limited the tillable area. Regional planners wanted to consolidate the strips into more efficient fields and settle new farmers on plots large enough to permit the use of farm machinery. A key to the plan was the use of the earthmoving equipment available to the Army engineers.

The project anticipated that the troops would survey the land, remove the topsoil, level the hedgerows and terraces, and then replace the topsoil. The community of Weingarten agreed to feed the soldiers during their workdays. The town mayor selected a local inn to provide food and drink

U.S. ARMY, EUROPE
FAMILY HOUSING
WEST GERMANY
30 June 1953
Area Command Boundary (approximate)
Family Housing Project Site
Other Project Site
0 50 100 Miles
0 50 100 Kilometers
DENMARK
Hamburg
Bremerhaven
Bremen
NETHERLANDS
Hannover
BERLIN
Berlin
EAST GERMANY
Rhine R.
Elbe R.
Leipzig
Dresden
Erfurt
Cologne
Fritzlar
Hersfeld
NORTHERN AREA
WIESBADEN MILITARY POST
Giessen
Wetzlar
Bad Nauheim
Büdingen
WESTERN AREA
Frankfurt
Gelnhausen
Hanau
Babenhausen
Aschaffenburg
Bad Kreuznach
Kirchheimbolander
Mainz
Darmstadt
Idar-Oberstein
Oppenheim
Worms
Wertheim
Kitzingen
Würzburg
Bamberg
Neubrücke
Kaiserslautern
Mannheim
Heidelberg
Baumholder
Landstuhl
Vogelweh
HQ AREA
Zweibrücken
Metz
Pirmasens
Münchweiler
Schwabisch Hall
Heilbronn
Crailsheim
Vaihingen
Ludwigsburg
Ellwangen
Karlsruhe
Stuttgart
Bad Cannstatt
Schwäbisch Gmünd
Möhringen
Böblingen
Nellingen
Göppingen
FRANCE
Neu Ulm
Leipheim
Augsburg
Munich
SOUTHERN AREA
Mulhouse
Bad Tölz
Garmisch
SWITZERLAND
AUSTRIA
Innsbruck
LUXEMBOURG
BELGIUM
CZECHOSLOVAKIA
Pilsen
Herzogenaurach
Fürth
Nuremberg
Schwabach
Ansbach
Hohenfels
Regensburg
Straubing
Gablingen
Scheyern
Landshut

Map 7

for the soldiers. The innkeeper's daughter, who spoke good English, acted as an interpreter for the enlisted man supervising the surveying, Robert Rodehaver. Town officials communicated with Rodehaver through the interpreter, and he informed the engineer troops of the jobs covered by the plan. The troops moved equipment and earth over several hundred acres, transforming the farmland in a revolutionary way. After his tour in Germany, Rodehaver went home to Wisconsin accompanied by the innkeeper's daughter, whom he married. In 1959 they returned to Germany, where he built a long career as a civilian engineer for the Army.[44]

Not all Helping Hand projects ended as happily as Rodehaver's story. In the small town of Busenbach, also near Karlsruhe, the 291st Engineer Company from nearby Ettlingen began work on 12 September 1954 to help widen a footpath from the railroad station into town. A year earlier this group had built a soccer field for the town.[45] This time, four days after the work began, an Army bulldozer hit a tank mine left from the war; the explosion killed the operator, Pvt. Roy L. Mattson. To honor the young soldier's memory, the town erected a monument. Contributions from people in fifteen communities that had been assisted by the Army engineers helped finance the memorial, and the leaders of Busenbach invited Mattson's parents to Germany. Neither the Mattsons, who worked a dairy farm in Minnesota, nor the communities that funded the memorial could afford the cost of a transatlantic flight, but the Minnesota congressional delegation persuaded the Pentagon to arrange a flight for the family.

On 13 February 1955, Private Mattson's parents attended the dedication ceremony in Busenbach. The German county commissioner characterized the memorial as a symbol "for the peaceful and benevolent cooperation and understanding between peoples, [a symbol] that will serve to exhort us all to work together in peace, understanding, and freedom for the well-being and happiness of all peoples."[46]

Peace seemed elusive in the early 1950s. The West Germans feared an invasion, and East German propaganda played upon their fear. After the fall of Seoul, the South Korean capital, East German leaders spoke of the impending collapse of the "Bonn puppet government" and evoked the prospect of trial in a "people's court" for the pro-Western leaders.[47] The construction managed by the Army engineers in Germany between 1950 and 1953 gave tangible expression to the formation of a common defense for Europe and West Germany. More than bricks and mortar, the construction helped transform U.S.-German relations. The dollars spent on military construction provided a visible sign that U.S. forces would be present in Germany as long as a threat of invasion existed.

Building West of the Rhine

As more troops arrived in 1951 and 1952, construction of new installations proceeded at a frenetic tempo. Creating an entirely new base of operations in the Rhenish Palatinate (*Rheinpfalz*) typified the intensity of effort that accompanied the expansion of U.S. forces.

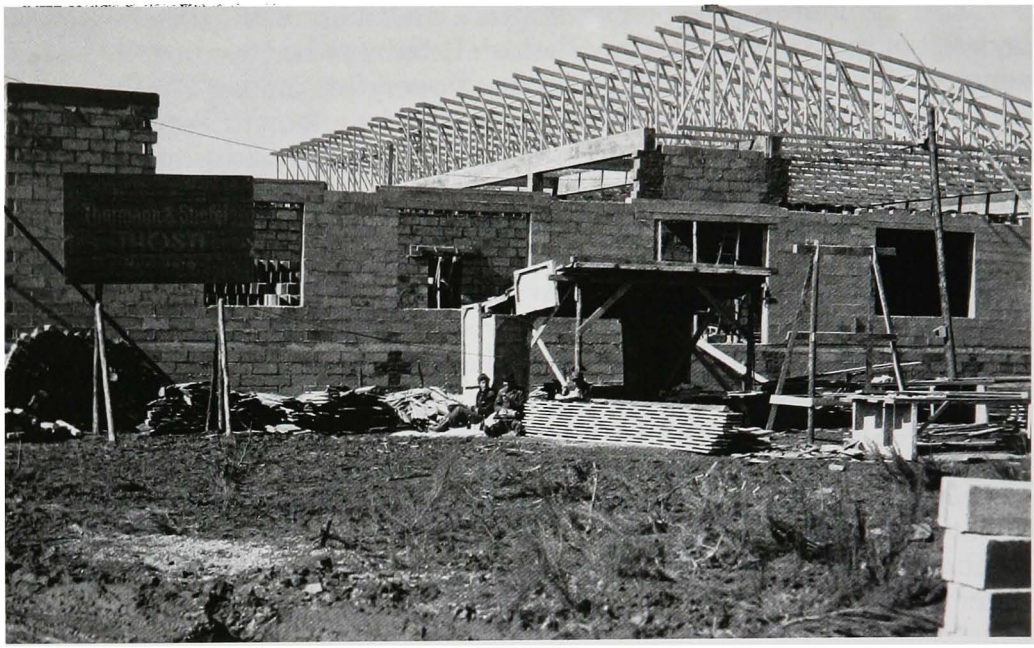
More remote from a potential attack and more defensible because it lay west of the Rhine River, the Rhenish Palatinate had become the French zone at the end of the war. By 1950 the cooperation among Western states had made such distinctions unnecessary, and diplomatic representatives worked out agreements to shift U.S. forces, depots, and installations into the area around the principal city of Kaiserslautern.[48] The Army transferred tons of supplies into this area from the exposed depots east of the Rhine. Along with the movement of materiel came scores of service and headquarters units.[49]

To accommodate the shift, the Army established its biggest supply base outside the continental United States.[50] Beginning in March 1951 and spending more than $1.19 million a month, the post engineer of the new post, Col. George E. Pickett, managed work on an unprecedented scale. This work included construction and rehabilitation of troop housing, training, support, and recreational facilities; nine major technical service depots with related tactical supply points; radio sending and receiving stations; landing fields for light aircraft; medical facilities; and a host of other military installations.[51] The program also provided 4,800 family apartments for the Army and Air Force, shopping centers, gasoline stations, motor-repair shops, schools, chapels, theaters, and clubs for both enlisted men and officers. The Army engineers oversaw all this construction between the summer of 1951 and the summer of 1953.[52]

When Lt. Col. A. M. Eschbach arrived in June 1951 as chief of construction in the post engineer's office, very little planning had been done for the pending construction in Rhineland. Men, supplies, and equipment were arriving; and he had no facilities in place to accommodate them.[53] Because no established U.S. military headquarters existed in the Rhenish Palatinate, Franco-American procedures for cooperation had to be worked out on the spot. To further complicate Eschbach's task, the area was sparsely populated, its towns and small cities had been badly damaged during the war, and it remained a distressed and depressed area even in 1951. Kaiserslautern supported a population of almost 60,000 in structures with evident war damage.[54]

The size of the undertaking, the need for speed, and the expansion of demands as the program progressed all made the buildup in the Rhenish Palatinate a challenge. Troops of the 2d Armored Division, who arrived during the summer of 1951, found the facilities they were to occupy still under construction. Some troops had to spend the 1951–1952 winter in tents, but many more were housed in hastily constructed semipermanent barracks. The engineers also rushed construction of depot facilities for medical supplies. Contractors rehabilitated a commissary to serve about 200 in September 1951. In July 1952 a new building opened to serve almost four times as many troops. In January 1954 a commissary opened with eleven times the capacity of the original.[55] Such was the pace of expansion.

Throughout Germany, local workers and managers had difficulty dealing with American imperatives in fast-paced construction programs. Eschbach explained that German craftsmen and professionals "well



Construction of a Shipping and Receiving Warehouse near Kaiserslautern, March 1952

understood what was meant by the word 'rush,' but not by [the concept of] 'expediency.'"[56] The Germans wanted to build carefully, solidly, and for the long term, but the Americans were under pressure to get the job done rapidly, economically, and with only semipermanent construction.

A lack of qualified personnel plagued the building program in the Rhenish Palatinate from the outset. Engineer officers were in short supply in 1951 because of a general shortage throughout the Army and the demands of the Korean War. As in Austria and elsewhere in Germany, the Army recruited civilians in the United States, but many were reluctant to take up residence in Europe, especially in the depressed Palatinate. Low unemployment in the United States made it difficult for the Army to offer salaries equivalent to those obtainable in industry and government. In October 1951 the building program west of the Rhine employed only 15 percent of the American personnel deemed necessary for a project of its size. Only 20 percent of the requisite German personnel were on hand. Most of the laborers employed by German contractors came from outside the Rhenish Palatinate.[57]

To compensate for the chronically short supply of labor, Eschbach obtained permission to use troop labor. Most of the soldiers had no construction experience, but they proved willing workers. Teams were assigned on a ninety-day basis, but Eschbach requested several teams to remain for six months. The engineers also used the labor service units made up of former displaced persons from East European countries.[58]

The infrastructure of the Rhenish Palatinate could not support the U.S. military construction. The electrical network was barely adequate to serve rural villages and some small factories in larger communities. To upgrade the Mangin Caserne, an old facility in Mainz, the engineers increased the expected electrical utilization from 400 to 2,000 kilowatts and increased the water system by 400 percent. The family housing project in Vogelweh on the edge of Kaiserslautern used an average of 870,000 gallons of water a day and produced 609,000 gallons of sewage. In Vogelweh, they created a separate water supply system and paid subsidies to Kaiserslautern to enlarge its existing sewage disposal plant. The increased demand on the electrical grid that served the area necessitated expanding the generating capacity throughout the region and increasing the transmitting capacity of the main and feeder lines. Similar problems existed for the road network. The rail network provided adequate lines, but the Army engineers had to build special freight yards and access lines.[59]

The plan to relocate U.S. troops to the Rhenish Palatinate called for developing medical facilities west of the Rhine, to the rear of any expected attack. The engineers built 1,000-bed hospitals in Münchweiler, Neubrücke, and Landstuhl and a series of large dispensaries. They also rehabilitated a former German military hospital and increased its capacity from 150 to 500 beds.[60]

As usual, hospital construction imposed a myriad of special demands. Each facility occupied a large area. Crews grading the terrain had to ensure that the slope for ramps would not exceed the maximum of five

New facilities west of the Rhine included this family housing complex in Vogelweh, near Kaiserslautern.

Medical Facility under Construction in Landstuhl

degrees. The hospital structure—a central building with wings projecting out from each side—required a specially designed heating plant. Medical Corps personnel insisted that wards be oriented to achieve the most favorable conditions of light and air. Because hospitals operated with both German and American equipment, they had to be wired for both 110- and 220-volt electrical circuitry. The air, gas, and oxygen supply lines required copper tubing. The terrazzo floors in surgery rooms had to be equipped with special copper screens grounded to prevent static charges from causing a spark that could ignite ether or other volatile substances. Cork flooring was installed in some therapy rooms to absorb and dampen sound, but the cork created maintenance problems. It could be cleaned only with a cold wet mop; the customary cleaning agent, hot soapy water, dissolved the glue binding the cork particles.[61]

At the beginning of the construction program in the spring of 1951, only a few hundred American military personnel served in the Rhenish Palatinate. By the end of 1953 more than 40,000 soldiers crowded the province, and more than 70 percent of the buildings used by the U.S. military had been built from scratch in less than three years. The building program cost approximately $250 million—half of it new construction—and at its peak employed an estimated 40,000 Germans. The construction program succeeded in creating the largest Army installation outside the continental United States. It provided apartments for 6,000 families, schools for 4,000 dependent children, and facilities for the supplies that would flow from France in support of a force totaling more than 60,000 in the area.[62]

Air Force Infrastructure in Turkey

In 1947 the U.S. government sought to implement the Truman Doctrine by sending military advisers to Turkey. Under the assistance program, the Joint American Military Mission for Aid to Turkey (JAMMAT) coordinated the work of several service groups—The United States Army Group (TUSAG), The United States Air Force Group (TUSAFG), and The United States Navy Group (TUSNG). Each group pursued its own particular activity in support of the Turkish military.[63]

In 1948 the U.S. Air Force began an ambitious program to develop facilities and upgrade existing bases in Turkey and to train the Turkish air force. After a year of effort the progress on the construction was unacceptable. Moreover, the inclusion of Turkey in the Mutual Defense Assistance Program of 1949 meant additional construction would be planned for the Air Force. To execute the Air Force's construction program, one of the officers of the American Military Mission in Turkey, Col. Thomas H. Lipscomb, recommended creating an Army engineer organization comparable to an engineer district in the United States. JAMMAT adopted his suggestion and on 10 May 1950 established The United States Engineer Group (TUSEG) with headquarters in Ankara, Turkey's capital. (*See Map 8.*)

TUSEG began working directly under the chief of engineers in Washington, D.C., but quickly passed to other Corps of Engineer commands: North Atlantic Division in December 1950, East Ocean Division in November 1951, and Mediterranean Division in February 1952. In May 1954 the Joint Construction Agency under the commander in chief of U.S. forces in Europe took over responsibility for construction in Turkey and Greece. Through all its changes in chain of command, TUSEG's character and mission remained essentially the same: construction and engineer support of U.S. Air Force personnel, bases, and electronic listening posts in Turkey.

TUSEG began with a small number of dedicated personnel. In part because the customs, religion, and mores of the local population created a living situation vastly different from either Europe or the United States, Americans assigned to work in Turkey developed a strong esprit de corps. TUSEG's Central Office in Ankara never had more than fifty people, and the number of the staff in the field waxed and waned as projects came into the program. From the outset TUSEG faced a vexing problem of communications. The group always had project sites scattered around Turkey; it also had nonengineer agencies in its chain of command. Mail and telegraph services within Turkey were rudimentary and unreliable. Telephone communications, both within and outside the country, were discouraging at best, so contact with the supervisory office in the United States was rare. Radio equipment for inland communications had the potential to solve one aspect of the problem, but the Turkish government was reluctant to concede radio channels to the group. Air Force airplanes acted only intermittently as couriers.

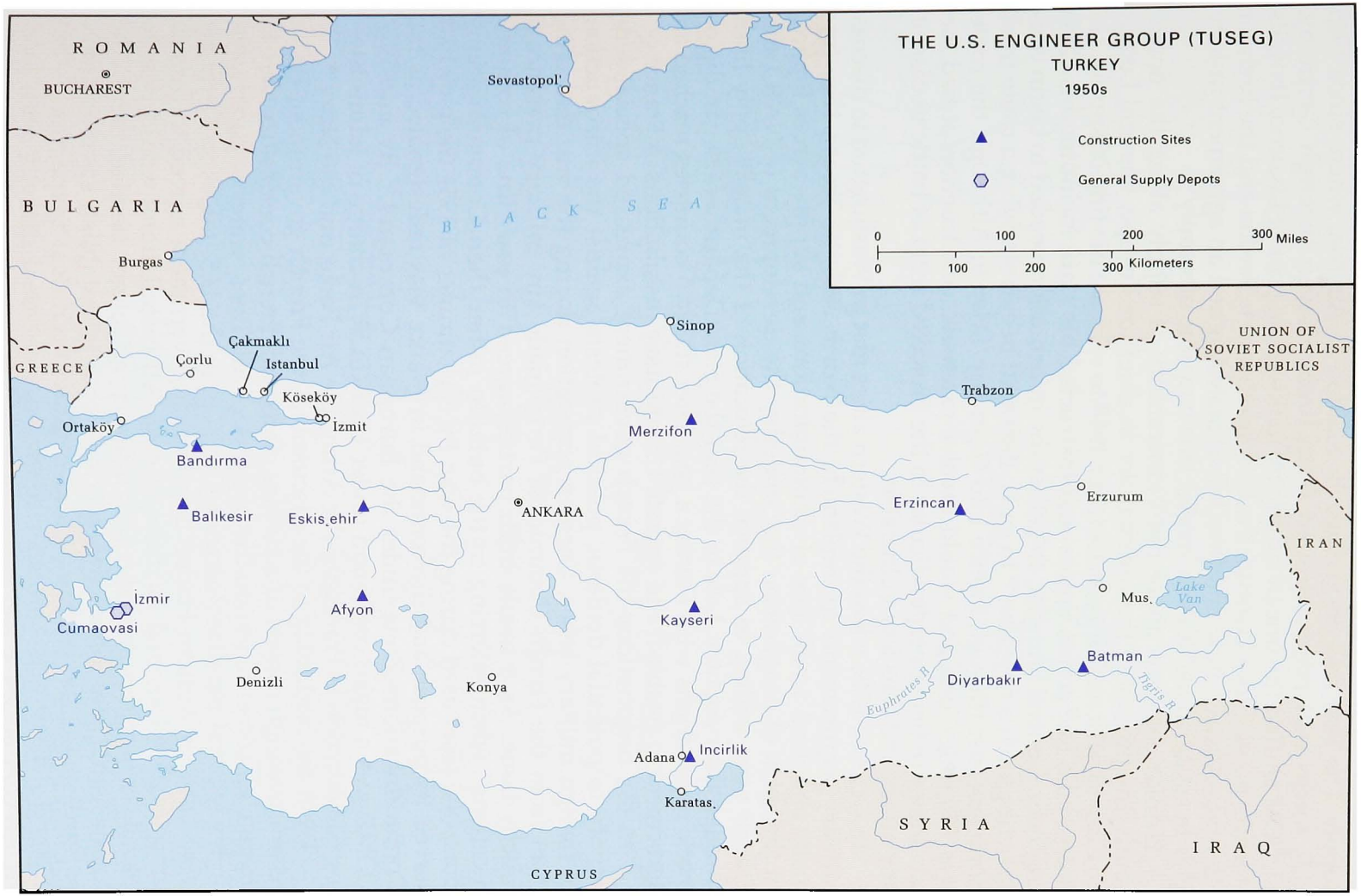
TUSEG's problems extended beyond difficulties of communications. JAMMAT had established a general supply depot near Ismir in Cumaovasi, to which construction equipment, much of it left over from World War II, was shipped in the late 1940s. When TUSEG's engineers tried to draw construction equipment from the depot to begin their jobs in the early 1950s, they found that the American ambassador to Turkey had loaned essential pieces to the Turkish government's Department of Public Works. The Turks resisted returning the equipment to the U.S. military engineers, and the chief of TUSEG had to struggle with Turkish authorities to recover the equipment essential to his mission. Other equipment had been assigned to the Turkish Air Force for projects unrelated to TUSEG's priority tasks. When the engineers finally recovered it, much of the equipment had been destroyed by misuse. In one instance, the Turks had replaced brake fluid in a consignment of thirty trucks with normal engine oil, which had dissolved all the rubber parts in the brake system, making the vehicles useless.

The plan that governed TUSEG's work during the 1950s projected construction or reconstruction at eight locations across Turkey: Diyarbakir, Eskisehir, Kayseri, Bandirma, Erzincan, Balikesir, Afyon, and Merzifon. The projects in Erzincan and Afyon were never built; the project in Kayseri, although begun, was quickly suspended and only completed much later. Other construction was added to the original program, notably in Batman and in Incirlik near Adana. By the summer of 1952, TUSEG's work involved about $30 million in new construction. Subsequent additions brought the total for this phase to about $45 million.

From Truman's speech in March 1947 through Turkey's inclusion in the NATO defensive perimeter for Europe in the early 1950s, the country assumed a special place in the Western military and diplomatic planning. It lay on Russia's border, and building bases there put U.S. military might within striking distance of the Soviet Union in the event of hostilities. Still, Europe constituted the primary focus of conflict between the United States and the Soviet Union during the early Cold War years, and the Soviet blockade of Berlin demonstrated how vulnerable Germany was to both military and political-psychological pressure.

New Lines of Communications

When Cold War tensions increased after the Soviet blockade of Berlin in the summer of 1948, the supply line for the U.S. Army of occupation in Germany and Austria became strategically untenable. The line stretched from Bremerhaven in northern Germany through Frankfurt into southern Germany and to Austria. It paralleled the frontier with the Soviet zone in Germany and the Czechoslovak border for its entire length at a distance of only about fifty miles. This location made it hard to defend even with large numbers of troops; reductions in U.S. troop strength made it impossible to defend the line of communications against any serious Soviet aggression.[64]


THE U.S. ENGINEER GROUP (TUSEG)
TURKEY
1950s
Construction Sites
General Supply Depots
0 100 200 300 Miles
0 100 200 300 Kilometers
ROMANIA
BUCHAREST
BULGARIA
BLACK SEA
Sevastopol'
Burgas
GREECE
Çorlu
Çakmaklı
Istanbul
Köseköy
İzmit
Ortaköy
Bandırma
Balıkesir
Eskişehir
ANKARA
Sinop
Merzifon
Trabzon
UNION OF SOVIET SOCIALIST REPUBLICS
Erzincan
Erzurum
IRAN
İzmir
Cumaovasi
Afyon
Kayseri
Mus
Lake Van
Batman
Diyarbakır
Euphrates R.
Tigris R.
Denizli
Konya
Adana
İncirlik
Karatas
SYRIA
IRAQ
CYPRUS

Map 8

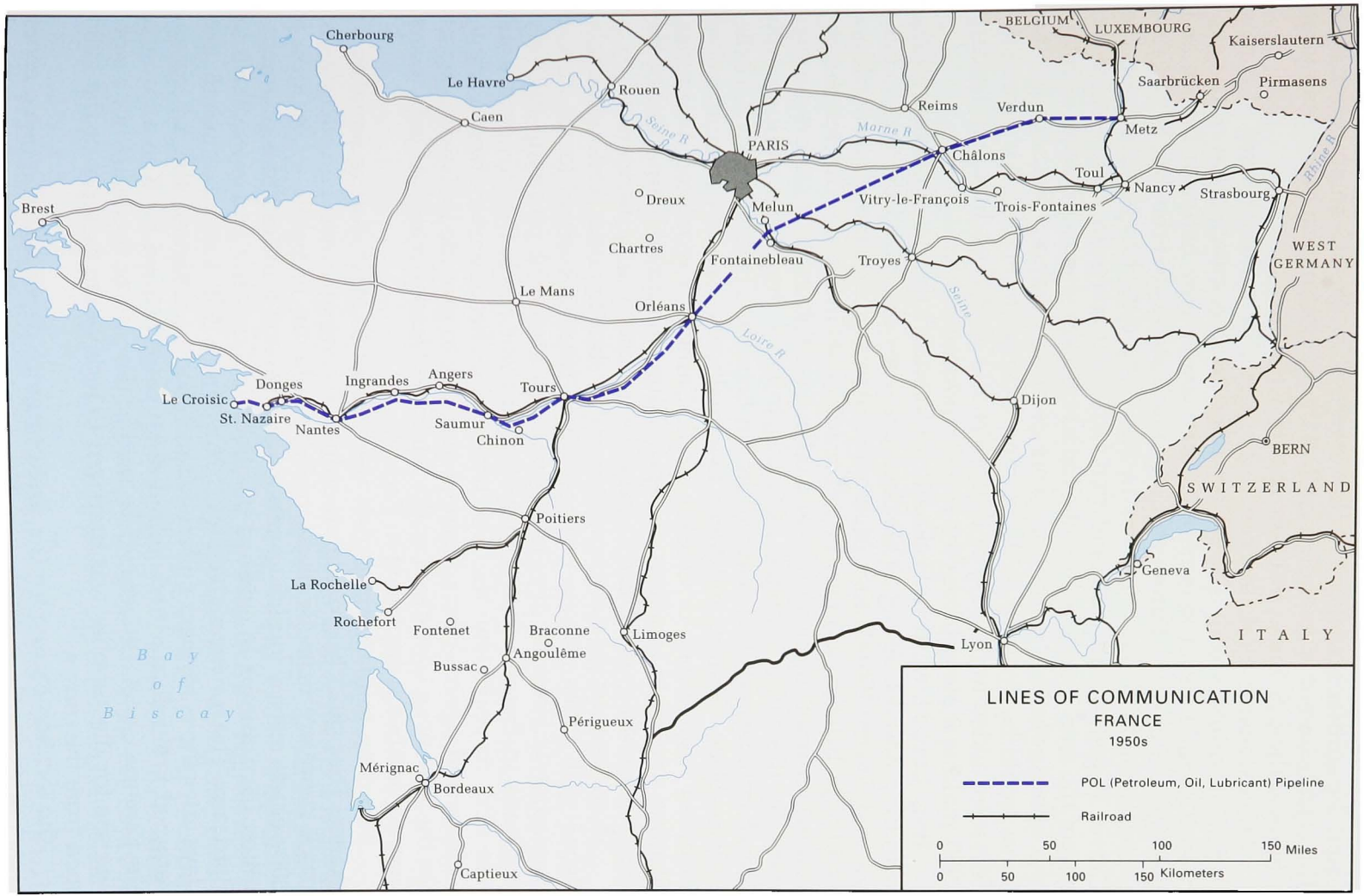
Military logic dictated a change in the lines of communications and supply. The first relocation came in relation to Austria, where since 1945 U.S. forces had been supplied from Bremerhaven through Germany. EUCOM shifted the line of supply by making the port of Livorno, Italy, its starting point. From Livorno, the line ran through Verona and the Brenner Pass into Austria. Italy and the United States signed an agreement in June 1951 to establish facilities to service this new line of supply.[65]

Similar concerns about the vulnerability of supply along the north-south line prompted the commander in chief for Europe, General Lucius D. Clay, to seek authority in October 1948 to relocate his line of supply. He proposed a line across France and instructed his staff, including his chief engineer, General Shingler, to gather the information needed to begin constructing such a new line.[66] In early 1949 staff began studying a route from Bordeaux east through France into Germany. (*Map 9*) Although the route was 650 miles long and would involve extensive construction, it had the advantage of being perpendicular to the projected front of battle in case of any attack and thus less vulnerable.

In October 1949, when the Western allies met in Washington to discuss military requirements to implement the North Atlantic Treaty, they formally endorsed a new line of communications and supply across France. In the spirit of cooperation that underlay the development of NATO, the French were willing to approve the relocation of the major supply lines through their country. Late in the year the State Department began diplomatic negotiations with France; a year later the two countries reached an agreement to establish and operate U.S. military installations in France.

In the negotiations the French government expressed special sensitivity to potential domestic political protests against the introduction of foreign military bases. German occupation during the war and criticism from the French Communist Party made any military presence a touchy issue. As a result, both parties agreed to use "line of communications" when referring to the buildup rather than Communications Zone, the label used during the war. By the summer of 1951 the ploy had served its purpose and the command in France was redesignated as the Communications Zone under the European Command.[67] By mid-1952 COMZ was a major command under USAREUR in charge of administering construction in France for the Army, the Air Force, and the Navy.[68]

From the beginning of the discussions, the French government insisted on sovereign control of activities on its soil. French contractors were to execute all construction on the network of rail lines, waterways, airways, highways, and pipelines necessary to supply the U.S. forces in Germany from ports in western France. The French government agreed to furnish supplies, services, and facilities at cost. All installations would pass to French ownership once the U.S. military no longer needed them. The Army would supervise construction—that is, establish specifications, approve plans, let contracts, and conduct technical inspections—but it could neither use American contractors nor deal directly with local French contractors. It had to deal with French contractors through French


Cherbourg
Le Havre
Rouen
Caen
Seine R.
PARIS
Marne R.
Reims
Verdun
Metz
Châlons
Toul
Nancy
Strasbourg
Rhine R.
BELGIUM
LUXEMBOURG
Kaiserslautern
Saarbrücken
Pirmasens
Brest
Dreux
Melun
Vitry-le-François
Trois-Fontaines
Chartres
Fontainebleau
Troyes
WEST GERMANY
Le Mans
Orléans
Seine
Loire R.
Donges
Ingrandes
Angers
Tours
Le Croisic
St. Nazaire
Nantes
Saumur
Chinon
Dijon
BERN
SWITZERLAND
Poitiers
Geneva
La Rochelle
Rochefort
Fontenet
Braconne
Angoulême
Limoges
Lyon
ITALY
Bay of Biscay
Bussac
Périgueux
Mérignac
Bordeaux
Captieux
LINES OF COMMUNICATION
FRANCE
1950s
POL (Petroleum, Oil, Lubricant) Pipeline
Railroad
0 50 100 150 Miles
0 50 100 150 Kilometers

Map 9

military and civilian agencies.[69] This indirect contracting system anticipated the similar arrangement that emerged in West Germany after 1955. The establishment of sovereign control by the host nation became an issue wherever the U.S. forces built during the Cold War.

The extensive work in France required the establishment of a new American military unit. On 1 December 1949, in anticipation of the successful completion of negotiations then under way between France and the United States, the European Command established the 7966th EUCOM Detachment. With headquarters in Paris, the detachment succeeded the Graves Registration Command that had been active in France since the end of the war. The detachment's initial mission was to prepare, develop, and operate the line of communications across France.[70] Because the Air Force would be involved in developing facilities in France, Air Force officers were added to the staff of the 7966th EUCOM Detachment in January 1950, making it almost from the start an interservice unit.[71]

Brig. Gen. Howard L. Peckham commanded the detachment initially, with Col. Mason J. Young as his engineer. They organized the staff to handle and convey 100,000 tons of supplies arriving each month in Bordeaux and La Rochelle to Germany by rail or to depots in France. The detachment had to construct supply depots and other installations to receive these supplies. By the end of January 1950, U.S. military engineers working with French counterparts had selected sites in Bordeaux, Rochefort, La Rochelle, Fontainebleau, Verdun, and Metz. Eventually, the line of communications included installations in Orleans, Toul, Chinon, Angoulême, Ingrandes, Saumur, and other locations. In April, Young became commander of the 7966th, and he was promoted to brigadier general shortly thereafter.[72]

From the start the detachment operated shorthanded. Although established with 1,000 military positions, it suffered personnel losses almost immediately because of existing policies aimed at reducing military positions in Europe. The detachment did not reach full strength until late 1950. At year's end, the 7966th moved its headquarters from Paris to Orleans and received the additional mandate to provide logistical support for the American contingent at the Supreme Headquarters, Allied Powers Europe, just being organized in Paris.[73]

American military strategists were eager to start storing supplies in France. They quickly ordered an ordnance company and a quartermaster truck company from Bamberg and Mannheim, respectively, to form a 300-vehicle convoy to pick up rations and several hundred tons of ammunition from dumps in exposed positions in Germany and move them to Bordeaux. The convoy arrived on 11 November 1950. Later that month, just days after the agreement with the French had been signed, the Americans rerouted to Bordeaux three ammunition ships headed for Korea through the Panama Canal. Unfortunately, neither the port of Bordeaux nor a storage site for the supplies was prepared to receive the materiel or the 1,000 men from the convoy.[74]

The location chosen for the first ordnance depot was Captieux, about sixty miles south of Bordeaux. The site in Captieux had the political

advantage for the French government of being government-owned land. It had been a military base since World War I and therefore no local landowners had to be displaced. On the negative side, the terrain in Captieux was a huge bog. Because of the composition of the soil and a water table just two feet below the surface, ground water could not drain away. Access roads and rail lines were not yet in place, and the heavy rains of November 1950 threatened to wash out the roads that did exist. The buildings left from earlier military use were no more than stone shells. The roofs and interior appointments had been stripped off and sold by the Germans during their occupation of France in World War II.[75]

The rains continued through February, turning the area into a gigantic mud bowl. Despite water everywhere, drinking water for the men in the camp had to be brought in from twenty-four miles away. Although the site was inappropriate and preparations inadequate, Captieux received sixty railroad cars daily for the first six months of 1951, each loaded with ammunition. Much of the ordnance sat along the soggy roadside.

By summer a profusion of insects infested the area; Captieux became known as "the Siberia of France." In September 1951 the 83d Engineer Construction Battalion, which had arrived in late May as the first construction battalion assigned to France, began to drain the area. With bulldozers, cranes, draglines, and a supply of mosquito netting, they dug over eight miles of drainage ditches; the principal ditch was over four-and-a-half miles long. It took another year before the site began to resemble an adequate facility.[76]

Construction of the line of communications across France began badly in Captieux, and progress was distressingly slow. In January 1951 EUCOM learned that Congress had appropriated $51.5 million for the construction. By the end of the year, EUCOM had committed just over half ($29.4 million) to specific projects. More than eighty projects had been authorized for 1951; by year's end, fourteen were completed and only fifteen others under way.[77]

To account for this unsatisfactory pace the engineer's office in Orleans listed twenty-one factors that contributed to delays in construction. The list included differences in language and culture, absence of heavy construction equipment and power tools, limited experience of the French construction industry with large-scale projects, tardiness and absenteeism owing to poor local transportation and living conditions, excessive bureaucracy on both the American and French sides, and restrictions—which the American engineers identified as "beaux arts"—imposed by a French government agency charged with the aesthetic protection of the French landscape. The engineers ventured a prediction: "It is doubtful that our program will be completed within time schedules thru contractual sources in France."[78] Two years later a journalist from the *Saturday Evening Post* visiting the line of communications found the same problems still evident.[79]

Delays continued during 1951 because the Americans kept expanding the scope of the line of communications. At the same time they hoped

In the early 1950s, U.S. troops in Trois Fontaines lived in tents and prefabricated barracks, often under snowy and muddy conditions.

to negotiate a new agreement with the French. The French refused to renegotiate. Continuing American pressure on the French did nothing to improve relations.[80]

Poor planning, inefficiencies, and delays meant that U.S. troops arriving in France in 1950 and 1951 found only marginally adequate shelter. For the first winter the men used tents; only one of the barracks made available by the French had central heating. Even in the winter of 1951–1952 nearly 10,000 soldiers still bunked ten to a tent. The Army engineers winterized the tents with wooden floors, siding of wood and tarpaper, and a stove at each end, but they were no substitute for permanent housing. Moreover, many tent camps were without conveniently located running water. With inadequate paths and roads, the soldiers remained mired in the mud.[81] American military dependents in France fared little better. They faced an almost total lack of housing and no schools, hospitals, or service clubs. Because of the rapid influx of personnel, the rental market was tight and overpriced.[82]

In seeking to build the line of communications across France, the Army engineers fought more than mud, insects, and tight French control of the construction process. They also faced interservice rivalry: The U.S. Air Forces, Europe, had an agenda for construction in France that did not always coordinate well with the agenda of the Army. Air Force personnel participated on both the staff of the 7966th EUCOM Detachment and the staff of COMZ, but the Air Force chafed under the arrangement that

placed military construction in France in the hands of what they considered an essentially Army command. Starting in December 1950 the Air Force had done its own site surveys for airfields in France. In April 1951 the Air Force announced that it planned to build its own line of communications and supply, raising the prospect that the two services would "collide and compete" for contractors, heavy equipment, materials, and supervisory personnel.[83] Early in 1952 the Air Force opened its own Construction Office in Paris and engaged the services of an engineering company, Construction Management Engineering Associates, to manage the Air Force's construction program in France.[84]

It was not just the Air Force that contributed to competition for personnel and supplies. In 1951 six independent U.S. military commands operated in Europe.[85] All were participants in the rapid expansion of forces. All needed construction and needed it quickly. All wanted rapid responses from the builders, but they were incapable of setting firm programs for the engineers and contractors to follow. During 1951 and 1952 COMZ's engineers received ten revisions of the Army's construction program. Air Force specifications changed as often. These constant redefinitions of requirements led to logistical confusion, escalating costs, and ever-increasing postponements of completion dates for specific projects.[86]

In addition, the COMZ engineers trying to push construction forward had to contend with the French. On many of the air bases, construction plans called for American engineers to build such elements as operational pavement and hangars for U.S. aircraft, barracks for U.S. troops, and similar support facilities. These were, however, supplementary to French construction, which provided the basic construction and facilities for the air bases being built for use by NATO. The U.S. construction was thus dependent on the progress of French construction, and American commanders had no power to hurry their French colleagues.[87]

The U.S. military construction in Europe and in North Africa, combined with the demands of the Korean War, strained the capacity of the Armed Services to manage the program and of the foreign economies to absorb it.[88] In France alone, the American military had launched a half-billion-dollar construction program. The line of communications was planned initially to store supplies for an army of 100,000 men for forty-five days and within two years to expand to supply 260,000 men for sixty days. In 1950 there were fewer than 10,000 U.S. military personnel in France to manage this extensive program. Unlike the situation in Germany during the occupation, the U.S. military had no authority in France to requisition land and facilities. The Americans viewed the French construction industry as stolid and uncooperative. It was certainly overtaxed by the construction load stemming from the expansion of U.S. forces. By April 1952 forty-two projects, each worth more than $100,000, had been contracted, but not one had been completed on time.[89]

In the face of these obstacles, the line of communications was only haltingly taking shape across France. At Camp Bussac, twenty-nine miles northeast of Bordeaux, the 83d Engineer Construction Battalion built a

water system for 3,000 troops. The engineers established a water purification point and laid out a system of pipes across the post to distribute water. They repeated the work in Chinon, where they added a water cistern on a ten-foot tower that created enough pressure from gravity to distribute the water throughout the post.[90] In Bordeaux, this unit converted an old Ford Motor Company plant for use by the Air Force. The buildings had been heavily damaged during the war and needed concrete floors, reinforcing for walls, and windows. At the Merignac Air Force Base just outside of Bordeaux, the 83d also furnished utilities and equipment for French prefabricated buildings that were used as mess halls and latrines. Its personnel surveyed about a dozen different campsites throughout France for placement of prefabricated housing.[91]

Other sites also came on line: a tank farm at Toul, an engineer depot at Chinon, ordnance storage at Angoulême, quartermaster facilities at Metz, signal corps facilities at Saumur and Verdun, and a pipeline to transport petroleum products from western French ports into Germany. When the military exercise COMBINE was held in West Germany in the autumn of 1951, military materiel traveled along the line of communications across France rather than along the Bremerhaven line.[92] By 1952 over fifty American installations dotted the supply line from Bordeaux to the German border.[93]

The results of two years of effort were not, however, commensurate with either the need or the money available for the line of communications in France. With the confusion of the ever-changing construction programs, the waste and friction of the interservice rivalries, and the slowness of progress traceable to problems with the French system, the enterprise was clearly floundering.[94] Although EUCOM created the Communications Zone in mid-1951 to manage the augmentation of U.S. forces in France and to oversee the construction of the new line of communications, it failed to staff it adequately. When Maj. Gen. Samuel D. Sturgis assumed command of COMZ in early 1952, he found that the officer contingent assigned to him represented only 5 percent of EUCOM's officer strength, but that it carried 40 to 45 percent of EUCOM's officer shortage. In his judgment, COMZ was so understaffed that maintaining a coherent construction program remained virtually impossible. He spent the balance of the year working to correct the command's shortcomings. In November 1952 Sturgis succeeded Lt. Gen. Lewis A. Pick as chief of engineers and returned to Washington.[95]

The incessant delays in France prompted officials in Washington in 1952 to propose that they establish a single agency to act as the Department of Defense's executive agent for all construction within the authority of the commander in chief for Europe. Beginning in 1953 management of all military construction in Europe—except Germany—would be brought under one team with representatives from the Army, Air Force, and Navy working under the Secretary of the Army.

By the end of 1953 the U.S. Army engineers working under the European Command had extended their support network into Turkey.

They had begun to construct bases in France to oversee the new, more secure line of communications from the Atlantic into Germany. They had also established an American military presence of impressive dimensions within the French zone of occupation in the Rhenish Palatinate and, in the U.S. zone, built the facilities necessary to handle the rapid increase of American troops and personnel from fewer than 100,000 to over 250,000. Work in France would expand throughout the rest of the decade; in West Germany, the engineers would face the adjustment necessary to cope with the establishment of political autonomy, the lifting of the occupation regime, and, accompanying that change, the end of Deutschmark funding of the American military presence.

4

CONSTRUCTION IN THE MID-1950s

The military buildup in Germany and France and the periphery of the Soviet Union strained American military engineer resources. By 1953 the Engineer Division of the European Command (EUCOM) asserted sufficient management control of the expanding construction program in Germany to achieve orderly progress. In France, by contrast, progress was neither orderly nor satisfactory. The disarray prompted the U.S. defense establishment to reorganize management of the overseas construction program. In January 1953 the Department of Defense created the Joint Construction Agency (JCA) to oversee construction for all of the military services in Europe outside of Germany.

Despite progress in Germany, the Army faced challenges that impinged on the construction program. After the end of the war the German government had borne the costs of the occupation, including the costs of military construction. As the Federal Republic of Germany became an ally, arrangements to pay the costs of occupation changed. The Engineer Division's budget now depended on the appropriations process in Washington and congressional review.

Deutschmark Construction in Germany

Germany was the only North Atlantic Treaty Organization (NATO) country in Europe that fell outside the construction authority of the JCA. U.S. military construction between 1953 and 1957 continued under the procedures worked out with the government of the new Federal Republic of Germany. In contrast to all other construction, the West German government was still paying for construction in Germany in Deutschmarks (DM), an extension of its responsibility to bear the costs of the occupation. For the period 1 July 1953 to 31 December 1957, Deutschmark construction for the U.S. Army cost DM 1.64 billion, the equivalent of $390.9 million at the prevailing rate of DM 4.2 to the dollar. Between 1950 and 1953 the Federal Republic of Germany had funded another DM 2.5 billion of

American military construction ($595.2 million at the exchange rate for the early 1950s).[1]

By 1953 the three Western Powers occupying Germany had made a clear commitment to extend full sovereignty to the Federal Republic. Sovereignty meant the end to Deutschmark funding, but negotiations on sovereign status were delayed by their inextricable link to parallel negotiations among the West European states to include West Germany in a European defense community. The negotiations influenced the United States Army, Europe (USAREUR) construction program only insofar as Army planners kept expecting the Deutschmark funds to end. When the Federal Republic did attain full independence, it agreed to continue Deutschmark funding through 1957 to allow orderly completion of existing projects. During the transition, between 1953 and 1956, American military construction in West Germany operated much as it had after the Federal Republic's creation in 1949, preparing facilities for U.S. troops positioned to defend Western Europe and for their dependents.[2]

Dependent Housing

Between 1950 and the end of 1952, the buildup of U.S. forces to support NATO, with its dramatic increase in the numbers of U.S. troops, had produced a demand for dependent housing that far exceeded availability. Beginning in February 1951, dependents had been restricted from entering West Germany because of insufficient housing. The flow of troops into Germany slackened in 1953, but a backlog of requests for dependent residence kept the demand for housing high.[3]

During the autumn of 1953, USAREUR's commander, Lt. Gen. Charles L. Bolte, called for construction of new dependent housing. He wanted to enable the command to return to German proprietors all but a few essential requisitioned properties. He also was determined to make government quarters available for dependents and reduce the time—an average of ten months by late 1953—that a serviceman's family spent separated from him. Bolte commissioned a survey that identified a need for a minimum of twenty-five thousand new family housing units, most of which would involve construction funded with Deutschmarks.[4]

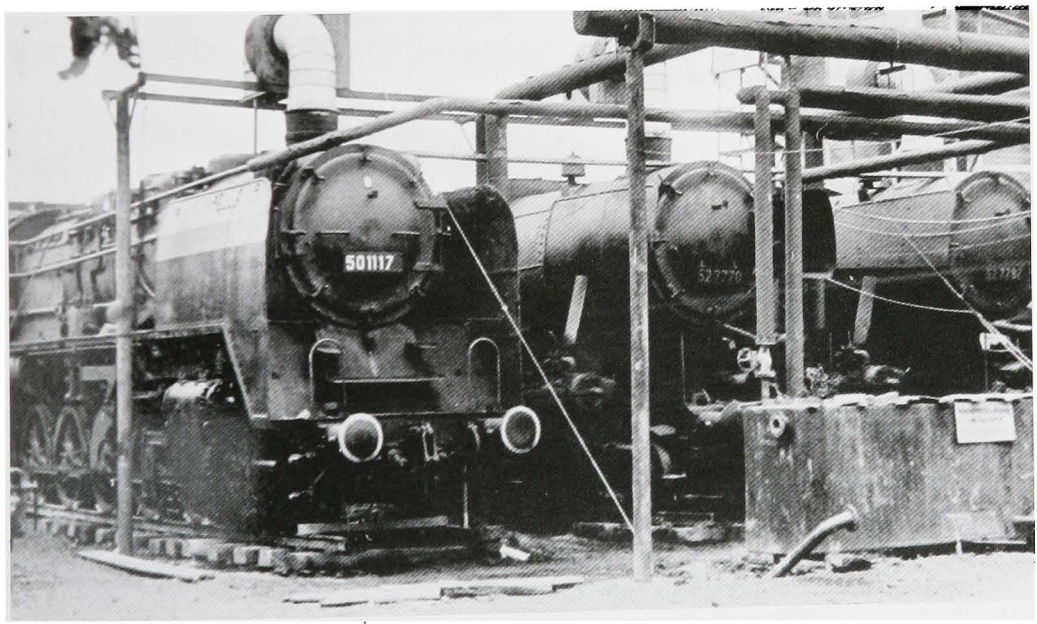
A three-year plan called for construction of about 19,000 family housing units in the first year and 5,900 more over the final two years. The plan's proposed construction anticipated slightly fewer housing units than Bolte's survey had identified as the minimum need. Even at that, it encountered obstacles that complicated its execution. In August 1953 Congress and the Department of Defense limited floor space to an average of 1,080 and a maximum of 1,250 square feet per unit.[5] In January 1954 the Department of Defense temporarily froze all funds for construction of new housing and directed that projects not yet initiated be resubmitted for approval. The fear that Deutschmark funding would end in 1954 and all the units would have to be funded with appropriated dollars also constrained American military planners.[6]

To take account of these pressures, as well as to meet the revised specifications on floor space, the Army engineers devised a new standard building with three stories and eighteen family units, equally divided among two-, three-, and four-bedroom apartments. Most of the buildings were furnished with central heating from a "district" plant that served several apartment buildings.

Providing such a heating source for a group of apartment buildings led in 1954 to one of the more unusual engineering solutions. The first 22 buildings of a 45-building, 810-apartment family housing complex in Kornwestheim near Stuttgart were scheduled to be available for occupancy on 1 September, but Army engineers rejected the German contractor's plans for the central heating plant as below acceptable standards of efficiency. The redesign of the heating plant delayed its completion, and the contractor was unable to provide heat in time for the scheduled arrival of dependent families.

H. Jace Greene, construction engineer for the Stuttgart military district, rented three train locomotives from the German National Railroad and attached them to the complex's heating system while work on the central heating plant continued. The train engines became portable boilers. Mounted adjacent to the apartment complex on specially adapted bases, they provided heat to the buildings for sixty-six days, until the permanent heating plant was ready. The cost of this arrangement per day for each apartment was approximately 1 DM.[7]

The construction plan for 1954–1957 called for about 22,000 new family housing units to be completed by the beginning of 1958. Ninety percent of the planned housing was for U.S. Army personnel. Total cost of the



Railroad locomotives provided heating to an apartment complex in Kornwestheim.

construction came to just over DM 1 billion ($238 million at the exchange rate). The average cost per apartment unit ran about DM 42,000 ($10,000) for fiscal year 1954 and about DM 54,600 ($13,000) for fiscal year 1955.[8]

From 1950 to 1957 dependent housing accounted for the largest single share of construction money (42.3 percent). During the early years, spending was relatively high on troop housing and training facilities. As facilities for troops were completed, programs to provide dependent housing took a greater part of the construction budget. Between 1953 and the end of the Deutschmark construction program in 1957, spending on family housing more than doubled.

Bachelor Officers' Quarters

A shortage of bachelor officers' quarters (BOQ) characterized the early years of the buildup, and, in spite of the completion of over 4,000 BOQ units, USAREUR still faced a substantial need in 1953. The command encountered complications with the standard design for the BOQs. The United States European Command (USEUCOM) guidelines had reduced floor space per occupant, and the four-story design used during 1950–1953 exceeded the new regulations. The USAREUR engineer's office had standard plans for another BOQ building that met the new regulations on floor space, but this two-story structure required more than twice as much land per person as the four-story building. It had a second liability: Local authorities considered it an eyesore. To resolve the problem, the USAREUR engineer sought and obtained from the Department of the Army a modification of the USEUCOM criteria and thus was able to continue to use the four-story structures, which the Germans accepted without objection. Between mid-1953 and the end of 1957 a vigorous construction program created nearly 5,000 BOQ spaces and achieved a near balance between demand and supply.

Community Support Facilities

Engineer programs also addressed basic utilities. The chlorinating of water, an issue of public health in the minds of the American military authorities, had been imposed on German communities by the occupation authorities. Many of the German cities and towns from which the military purchased water strongly objected to chlorination. As West Germany approached sovereignty, these communities made it known that they would discontinue the practice. When the occupation statute officially ended in May 1955, USAREUR had to set up its own chlorination program to supply water to U.S. troops and to family housing complexes. The concentration of Americans in compact communities and casernes made implementing this program relatively simple.

Medical facilities for the U.S. military in West Germany expanded rapidly during the 1950s. Between 1950 and 1953 Army engineers supervised construction, rehabilitation, or enlargement of fifteen hospitals. In the

next four years engineer programs put more emphasis on rehabilitation and extension than on new construction, although a new 250-bed hospital was built in Heidelberg. Of the ninety-seven Army medical dispensaries in Germany in 1957, thirty-two were new or newly rehabilitated. The program provided nine new dental clinics over the same four years.

All these health facilities—hospitals, dispensaries, dental clinics, and sanitary water supplies—absorbed relatively little of the overall construction budget. They all fell into the funding category of "administrative, maintenance, air navigation, medical, and other facilities." Construction in this category accounted for only 7.3 percent of total Deutschmark funds spent between 1950 and 1957.

Miscellaneous work on facilities to support and serve the military and dependent communities throughout Germany accounted for 6.4 percent of the construction funding for the period. This work included schools. Before 1950 a modest school system for military dependents had existed. The funds expended between 1950 and 1957 financed the development of an entire school system for American personnel in Germany.

Planning for the expansion of schools for dependents was poorly handled. The overall program to accommodate arriving dependents had no comprehensive, long-range plan and did not take into account the needs of each community. USAREUR's dependent school unit did an excellent job of forecasting the school population from year to year, coming within 2 percent of the totals of arriving schoolchildren, but the Logistics Planning Board and the comptroller refused to accept these estimates and

The high school in Furth near Nuremberg was part of the extensive school system constructed in Germany.

directed that they be revised downward. As a result, most school buildings were overcrowded from the moment they opened. Even additions proved inadequate to meet the existing demand. Between 1951 and 1953 three-quarters of the schools built had from three to fourteen additional rooms under construction by the time they opened or shortly thereafter. With construction costs increasing at a rate of 15–20 percent a year in Germany, such poor planning cost money.[9]

By the end of the school year in 1953, USAREUR operated eight high schools and seventy-two elementary schools in Germany with an average monthly enrollment of just under 15,000. By June 1957 there were twelve high schools; the number of elementary schools operated under USAREUR had decreased to sixty-nine as a result of the transfer of three schools to Air Force jurisdiction. Average monthly enrollment for elementary and high schools had virtually doubled, however, to 29,500.[10]

In addition to schools and medical facilities, community support facilities included chapels. From 1950 to 1957 Army engineers built almost 100 of the 237 chapels available to service personnel in Germany. The EUCOM Engineer Division, in consultation with the chief of chaplains, developed four standard plans for chapels with capacities of 175, 350, 500, and over 500 seats. The engineers recommended that communities of fewer than 1,000 people rehabilitate an existing building or build a simple chapel designed for the specific circumstances of the community rather than construct a chapel based on one of the standard designs.[11]

Community support facilities in Germany included chapels, such as this one at Downs Barracks in Fulda.

Troop Training Facilities

Construction of training facilities had taken precedence over dependent communities in the early years of the buildup. Between 1953 and 1957 it declined to less than 1 percent of the total spent on construction (DM 9.5 million [$2.3 million at the exchange rate] of a total expenditure of DM 1.64 billion [$39 million]).[12] Still, the construction of a wide variety of training facilities—airstrips, liquid fuel dispensing facilities, communications and navigational aids, passive air defense structures, and tank and other firing ranges—continued.[13]

Joint Construction Agency in France

Activated on 15 January 1953, the Joint Construction Agency had an unenviable task. Although the United States Congress had supported the program to construct a line of communications across France and had appropriated substantial amounts of money, progress in placing construction had come to a standstill. The JCA's mandate was to get construction moving. In practice, the JCA concentrated on construction in France; it assumed responsibilities in Austria, Italy, Greece, and Turkey only in 1954.[14]

The Department of Defense expected the JCA to get the best buy for the American construction dollar by eliminating competition between the services, avoiding unnecessary duplication, and applying uniform criteria and standards in design and construction. Contradicting its insistence on rapid progress, the Department of Defense twice imposed freezes on construction in France during the JCA's first two years of operation. These freezes undermined the JCA's credibility and disrupted the agency's efforts to overcome the bottleneck in construction placement developed between 1950 and 1952. With some success, the agency's staff in both the central and field offices cultivated cordial relations with the French officials in the military and civilian agencies that made decisions concerning U.S. military construction. That success was undercut by the difficulty of explaining to these officials why projects on which the JCA had been pushing the French for urgent approval could be suspended so abruptly. In addition, the agency's operations suffered from the tensions that developed between France and the United States over events in the Middle East. These factors, all of which lay outside the JCA's control, substantially impeded the agency's efforts; the JCA's short history has the quality of a roller-coaster ride, plunging and rushing between absolute frustration and commendable success.

The organizational plan for Europe anticipated that the Joint Construction Agency would be directly subordinate to the U.S. European Command; but initially USAREUR, with headquarters in Heidelberg, exercised authority over the JCA through its Communications Zone (COMZ) in France. By April a revised command arrangement put the JCA's commander directly under the USEUCOM commander and at the

same organizational level as the commanders of the command's other component services.[15] As a joint command involving all the services, the JCA had three officers representing the Army, Air Force, and Navy and acting as special staff assistants.[16]

Maj. Gen. George J. Nold took command of the JCA a month after its activation, with Brig. Gen. Orville E. Walsh as his principal deputy. Both were Army engineers. Nold served until July 1955, when another Army engineer, Maj. Gen. Bernard L. Robinson, succeeded him. As in the Corps of Engineers' organization in the continental United States, on which the JCA was explicitly modeled, military officers commanded the agency, but civilians held most of the staff positions. The structure—a headquarters office with district offices close to the actual construction sites—permitted centralized control and decentralized operations.[17]

The JCA first opened offices in Paris, but within weeks the agency moved its headquarters to suburban Boulogne-Billancourt. Both the Army and the Air Force, drawing from existing military construction operations scattered throughout France, provided startup staff for the JCA headquarters. On 1 April 1953, the new construction agency took over the three engineer districts that had existed under the Communications Zone and incorporated them as the Port District, the Northeast District, and the North District.[18] (*Chart 2*)

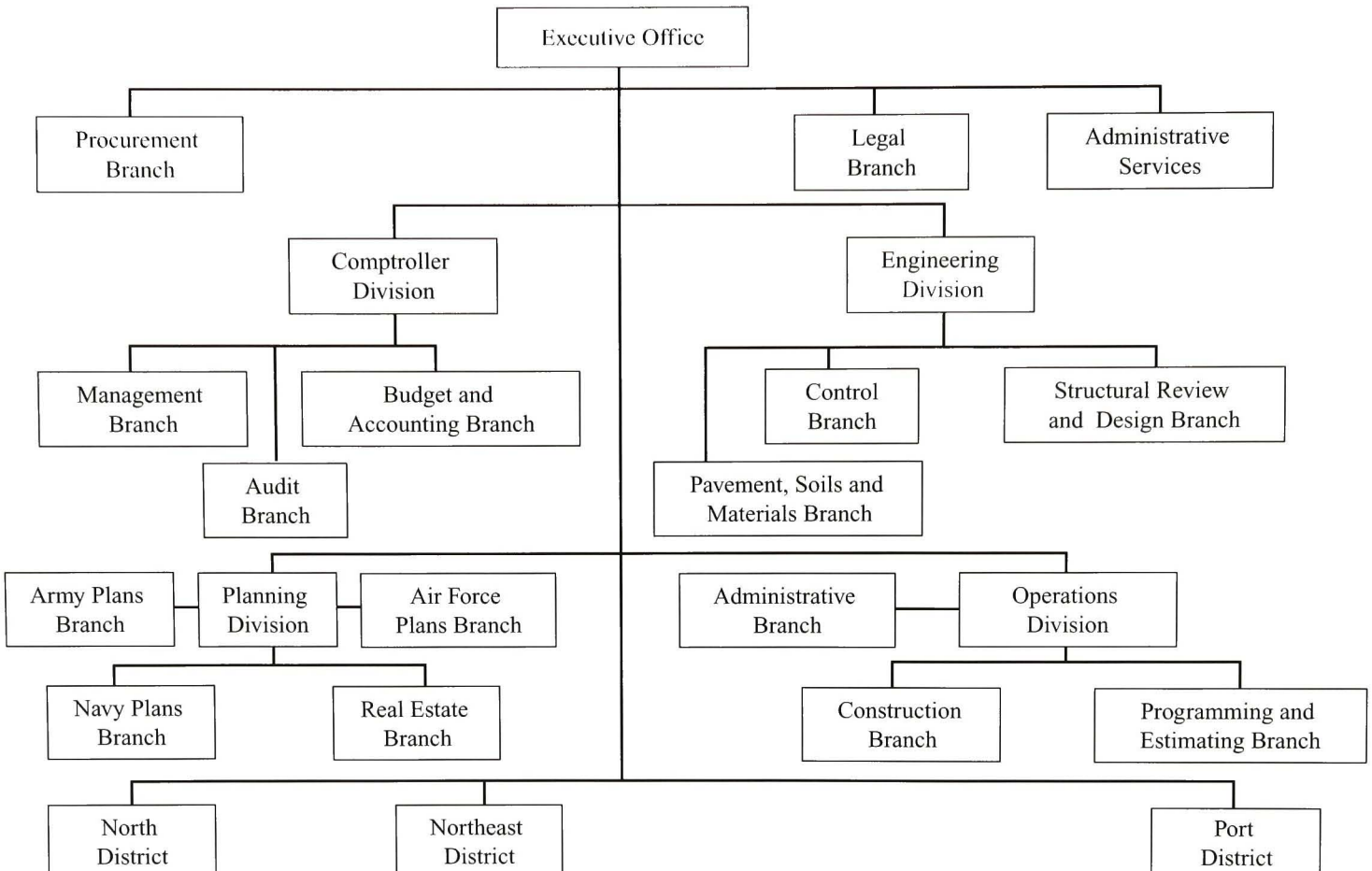
The Port District had its office at Bordeaux, and the Northeast District was located first at Verdun and later at Nancy; North District shared space with the central office in Boulogne-Billancourt. As the JCA's activities spread to other countries, the agency organized additional geographic districts to manage construction, but the three original districts concentrated on reducing the backlog of work in France. The headquarters maintained general supervision, overall control, and liaison with the French government. The commanders of the using services remained responsible for identifying sites for construction, securing approval from the host nation for the access to and use of the sites, and acquiring the land.[19]

Administrative Procedures

When the JCA began its work for the Army and the Air Force, the combined programs in France involved about 2,500 individual projects at some 120 sites from the Atlantic coast to the western frontier of Germany. By the end of 1953 about one-quarter of the $400 million construction program for the two services was *value in place*, that is, taking shape on the ground although not necessarily finished. Less than 10 percent of the overall construction scheduled for France had been completed.[20]

Explanation for the delays lay partially in the complexity of the contracting relationship with the French. Six agreements negotiated between November 1950 and August 1952 placed all U.S. military construction in France under the control of three French agencies: *Génie*, the army engineers for military installations; *Ponts et Chausées*, the civilian agency for bridges and roads for many of the supporting elements; and *Service de*

Chart 2: Organization of the Joint Construction Agency, 1953



l'Infrastructure, the infrastructure committee for work involving NATO.[21] The French insisted that projects initiated by the JCA be presented to one of these agencies at each stage from design through construction and inspection. Normally, the U.S. military engineers could deal with local French contractors only indirectly through the appropriate French government agency.[22] (*Chart 3*)

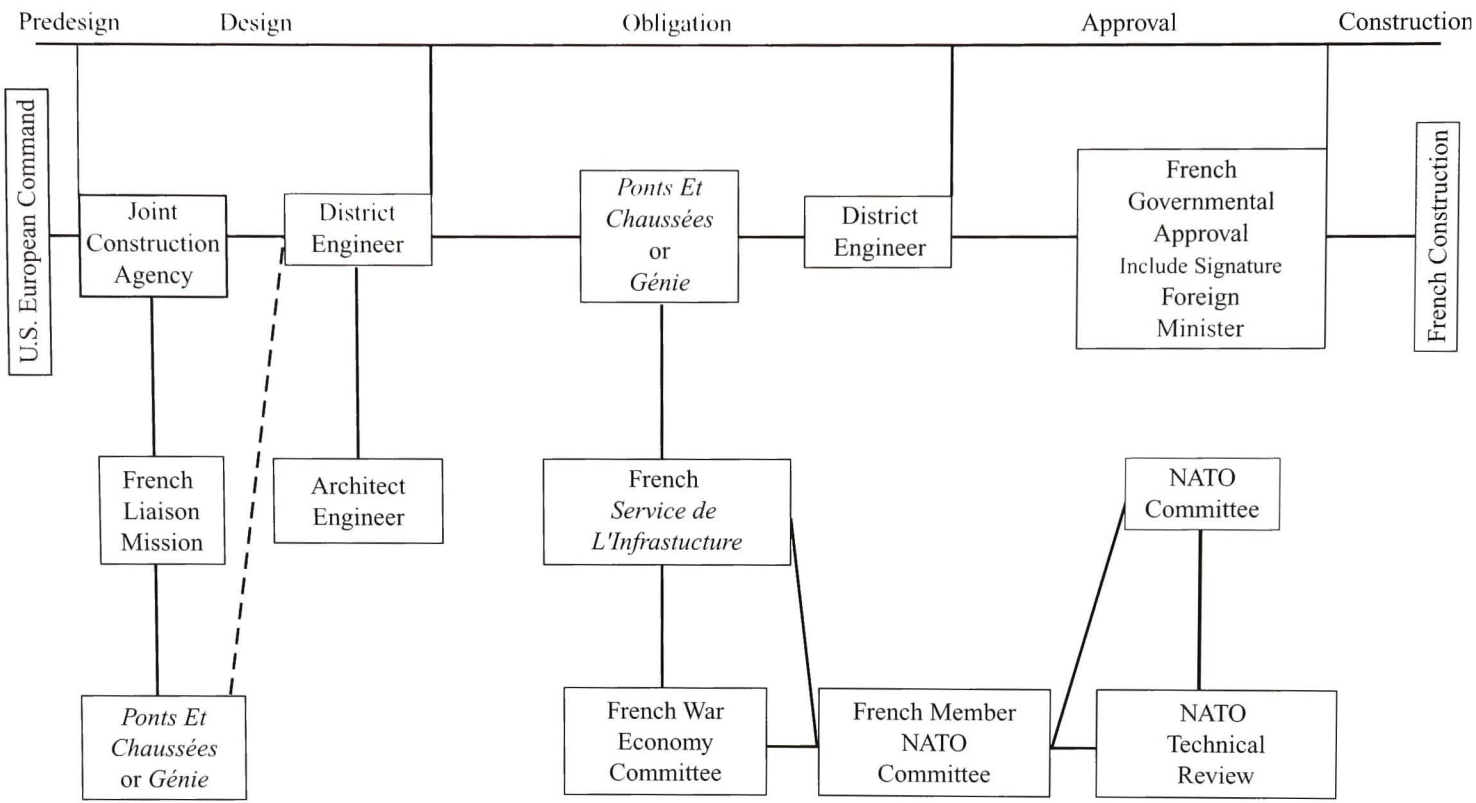
The process was cumbersome at best and paralytic at worst. Numerous differences in administrative approach provoked problems for which solutions had to be devised. For instance, the French insisted that money be committed for the construction of any project before they called for bids, even on its design. The U.S. Bureau of the Budget, by contrast, would not obligate funds until a construction contract had been awarded. This amounted to a situation in which the French would not start the contracting process until the money was available to complete construction, while the U.S. government would not make the necessary money available until there was a satisfactory contract. This impasse was bridged by the creation of a special account from which the French government paid French contractors and into which the JCA paid the reimbursements that it received from the military services.[23]

The special account allowed the JCA to assure the French agency that funds were available when presented with the proper form for bids on design.[24] Unfortunately, instances occurred in which U.S. military services did not deliver funds that the JCA had guaranteed and on which it had made good faith commitments to the French. These situations caused acute embarrassment to personnel in the JCA and made French officials mistrustful.[25] The development of standard operating procedures for French bureaucrats working with the Americans was a painstaking task that continued throughout 1953.[26]

Lack of coherent and consistent planning by the U.S. military leaders contributed to disruption and delays in construction. Neither the Army nor the Air Force had firm construction programs when the JCA began its work, and the services changed their requirements and criteria with distressing frequency. The Air Force, for example, drew up its first construction program in January 1953, and the JCA began to implement it in March. Toward the end of June the Air Force submitted major revisions, not as an integrated program but rather in a series of construction authorization forms. A short time later the Air Force informed the JCA that its program would be "substantially altered." Although the Air Force promised a new program each month from October to December, it did not deliver one to the JCA until January 1954. Additional revisions arrived three months later. By the end of 1954 the Air Force had submitted six different construction programs to the JCA in fewer than twenty-four months.[27] Changes in specifications or scope not only lengthened the process but also undermined the confidence of the French government's representatives in American assertions of urgency and commitment to specific projects.

The JCA also had to deal with delays in payment. The Air Force's supplemental funds for construction, scheduled for payment to the JCA in

Chart 3: Joint Construction Agency Construction Procedure in France



April 1954, were not actually available until October. All the design work for the projects was completed between May and September, but the JCA could not solicit bids on construction until the money was in hand.[28]

Similarly, changes by the Army in the hospital construction program and lack of information on equipment to be installed increased costs, contributed to delays, and embarrassed the JCA. The whole pattern of late changes, shifting criteria, and uncertain funding prompted the director of the JCA, General Robinson, to make repeated demands that such practices cease. He argued with staff in Washington that the JCA could make no progress in France *"under a staff policy which permitted continuing program and fund manipulation."* Washington assured General Robinson that changes would be minimized; but the changes continued, creating administrative headaches for the JCA right up to its closing hours in July 1957.[29]

Despite shifting criteria and frequent changes in program, the JCA made progress. Even by late 1953, when the Office of the Chief of Engineers in Washington ordered a study of the agency's effectiveness, the JCA had made measurable strides. The study concluded that the construction program was making more rapid progress than it had earlier under the Army or Air Force independently, and that operations were more efficient and economical.[30]

The JCA gained ground in processing the requests to build, but putting construction into the ground remained far behind schedule during the agency's first year. By the end of February 1954 the agency could claim construction starts on less than 15 percent of the jobs forecast just three months earlier.[31]

The agency did make headway in handling the bureaucratic aspects associated with its mission, especially in developing effective working relations with French agencies. The staff persuaded the French that the urgency of construction necessitated waiving or modifying standard administrative procedures. At the JCA's request the *Service de l'Infrastructure* suspended normal administrative procedures on work for seven air bases in France, one of which was in Dreux (about twenty miles north-northwest of Chartres), where an Air Force unit was scheduled to arrive in the autumn of 1954. Streamlining procedures allowed construction to begin two months early, a critical saving that permitted the JCA to take full advantage of the summer construction season.[32]

One incident illustrates how cooperation led to mutual benefit. In November 1953 the commander of the French VI Military Region, General Kauffeisen, encountered a chronic problem: He was seriously understaffed, especially considering the U.S. Army construction scheduled for the Northeast District. In a letter to Brig. Gen. W. W. Ford, commander of COMZ's Advance Section, Kauffeisen estimated that he would need additional six or eight well-qualified engineer officers to carry out the planned program. He informed General Ford that he had initiated a request for these additional engineers through his own chain of command, but suggested that a "tactful representation" of the situation from the commanding general of COMZ to the chief of the French Liaison Mission might add

weight to his request. Ford contacted his commander, who passed the notice on to the JCA commander, General Nold.

Nold then wrote to the French army officer who directed the *Génie* to convey that almost $28 million of military construction was scheduled for the JCA's Northeast District in 1954, all of which would be administered by the *Génie* of Region VI under General Kauffeisen. Nold diplomatically attributed to the JCA's Northeast District Engineer—rather than to General Kauffeisen himself—the expression of concern about the adequacy of the French staff in the Region VI office. Did the office have sufficient staff to administer so large a construction program? Nold then asked the director of *Génie* to "inquire into the question of augmenting the present staff in Region VI with the additional engineering and administrative personnel to insure [*sic*] the successful and expeditious completion of these facilities."[33]

The director the *Génie* thanked Nold for his observations and for the information on the magnitude of the construction program contemplated for the region. He assured Nold that the necessary provisions had been made to secure adequate civilian and military personnel to expedite the program that the JCA had outlined for the area. General Kauffeisen got the additional engineers he needed, and the work went forward.

The establishment of personal contacts at the highest levels of the French civilian and military bureaucracies constituted one of the major tasks of the JCA. Those personal contacts helped the agency reduce construction lead-time from the twenty-one months prevailing in early 1953 to fifteen months by mid-1954. By 1 September 1954, for the first time in its operating history, the JCA enjoyed a thoroughly healthy situation, with a backlog of work under contract and an established flow of design completions and requests for bids on design under way. Over the next two years, the JCA reduced lead-time for construction projects to thirteen months. Given the environment, this compared favorably with the nine-and-a-half months of lead-time for construction projects in the United States.[34]

Personnel Recruitment

Although the JCA's structure called for about 600 people, the organization began with just over 220 employees. This nucleus came from the Communications Zone's construction districts, the Engineer Division at COMZ headquarters, and the Air Force construction organization in Europe.[35] Recruitment became more difficult when, between January and April 1953, the Department of the Army froze all construction while it conducted an "essentiality review."[36] To fill positions, the JCA had to rely on COMZ staff that handled personnel in France through district offices. This meant that each JCA district engineer depended on the local COMZ personnel office to provide candidates for positions. Little exchange of information on available positions throughout France took place among the local offices, so hiring depended on who happened into any particular COMZ district personnel office.[37] Not only could the JCA not recruit

its own personnel, but its staff had very little direct contact with COMZ's personnel office. It took as long as seven months to process an appointee for a specific job.[38]

The JCA's recruitment suffered because government pay was relatively unattractive in 1953, while demand for professional engineers was high in the United States. The agency's experience with the employees of Construction Management and Engineering Associates (CMEA), an association of private contractors and construction management engineers, illustrates its competitive disadvantage. The CMEA had contracted in 1952 to manage Air Force construction in France.[39] With the creation of the JCA, the CMEA's personnel faced unemployment when the contract expired in September 1953. The JCA saw these employees as a potential pool of professionals and mounted a vigorous recruiting campaign, hoping to attract half of the 196 CMEA employees facing layoff. Barely 10 percent even considered joining the JCA. Most of the CMEA's positions were in Paris, but the JCA needed staff in its district offices, far from the attractions of the French capital. By their own admission, many who joined the JCA did so to obtain an income tax exemption for overseas employment.[40]

The JCA had greater success attracting professionals who already had experience working for U.S. forces in Europe. Edward Zawisza, who had fought in the war and then worked in the military government in Germany, joined the JCA in 1953. Over the next eight years he held a variety of positions with the JCA and its successors in France, assigned first to Bordeaux, then to the Chinon Engineer Depot project, then as resident engineer in Poitiers and as area engineer in La Rochelle. When construction in France slowed down, Zawisza relocated to Germany, where he continued working with the Army engineers into the 1980s.[41] Saul Fraint had worked in Austria and in Italy; his assignments for the JCA included the Northeast District headquarters in Nancy, the North District, and the headquarters office in Paris.[42]

By the end of June 1953, the JCA had managed to put together a staff of between 750 and 800 employees, but even these numbers were insufficient.[43] The JCA's personnel authorization increased, and by the end of 1953 it had filled just over 1,000 positions. Its personnel included 105 officers from the three services, 424 Department of the Army civilians (DACs), 478 French employees, and 3 third-country (non-American and non-French) personnel. In general, these proportions continued until the end of 1956 when, in anticipation of the agency's approaching dissolution, the staff began to leave.[44]

Dependent Housing

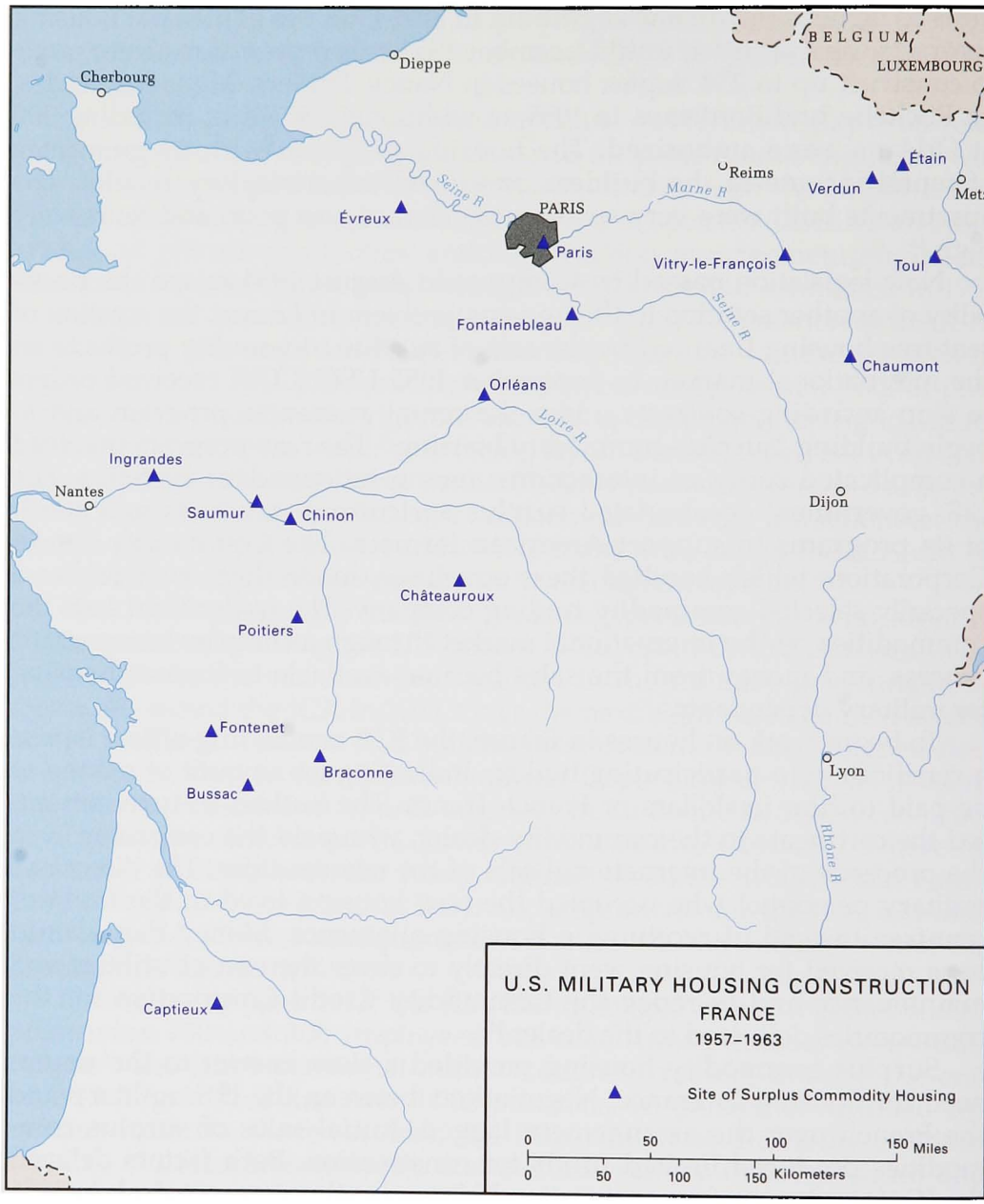
From the beginning of the buildup of American troop strength in France in 1950, finding adequate housing for military dependents had proved difficult. In 1952 Congress authorized contracts for housing with French construction firms, guaranteeing the builder 95 percent occupancy for five years. The first contracts were awarded for 300 family housing

units to be built in Orléans beginning in mid-1953. No additional housing contracts were awarded until December 1954, when provisions were made to construct up to 234 duplex houses in Nancy, Poitiers, Metz, Ingrandes, La Rochelle, and Bordeaux. In 1955 an additional 984 units, including 300 at Orléans, were authorized. The housing program, with its guarantee of rental income to the builders, produced unsatisfactory results. The apartments built were very small, maintenance was poor, and rents were high.[45]

New legislation passed by Congress in August 1954 raised the possibility of another solution to the housing problem in France: the creation of rent-free housing financed by the sale of surplus commodity products on the international market. In September 1955 USEUCOM received orders to stop awarding contracts under the rental guarantee program and to begin building "surplus-commodity housing." The new program involved a complicated series of interactions among independent agencies. The U.S. government accumulated surplus agricultural products as a result of its programs to support American farmers. The Commodity Credit Corporation, which handled these surpluses, made them available to a specially selected commodity trading company. The trader then sold the commodities on the international market through a complex bureaucratic process, and money from the sales became available to finance housing for military dependents.

To begin work on houses in France, the JCA contracting officer issued a certificate to a participating builder indicating an amount of money to be paid to him in dollars or French francs. The builder in turn submitted the certificate to the commodity dealer, who paid the contractor from the proceeds of the international sale of the commodities. The American military personnel who occupied the new housing lived in the facilities rent-free instead of receiving a housing allowance. Money they would have received for housing went directly to cover the cost of utilities and maintenance and to repay the Commodity Credit Corporation for the commodities delivered to the dealer.[46]

Surplus commodity housing provided a slow answer to the urgent need for housing in France. Negotiations between the U.S. military and the French over the arrangement lagged. Initial sales of surplus commodities produced limited funds for construction. Both factors delayed the JCA's invitation for construction bids under the program. In July 1956 the JCA's North District solicited bids and received four viable responses. Negotiations with the bidders lasted until May 1957, when a consortium of the French construction firm *Compagnie Immobilière Marc Rainaut* and the commodity firm of Bunge Corporation in New York signed a contract to proceed with the housing. By the time the contracts were in operation, the JCA had ceased to exist and management of the construction fell to its successor organization, the U.S. Army Construction Agency, France. In total the surplus commodity program financed about 3,000 housing units in a score of French communities between 1957 and the early 1960s.[47] (*See Map 10.*)



Map 10

Securing the Line of Communications across France

While the JCA struggled to bring the construction under control, American leaders reevaluated strategic policy for the supply of U.S. troops. The development of a supply line across France provided an alternative to the line in Germany south from Bremerhaven. In August 1952 the Department of the Army had asked USAREUR whether shipments

through the Port of Bremerhaven could be reduced to make the French line the exclusive line of communications and supply. After an evaluation that lasted more than a year, the department adopted a recommendation calling for a shift of all supply to the line of communications across France. USAREUR's plan, worked out in detail by March 1954, required additional construction in France and considerable augmentation in support personnel. The plan assigned top priority to preparing logistical support procedures and war plans; completing the pipeline for petroleum products; making depots operational; and developing the ports, communications networks, and command facilities necessary to sustain the military in the field. The goal was to provide USAREUR with 70 percent of its supplies through French ports by the end of 1957.[48]

This plan put additional pressure on the JCA to expedite construction, but Washington suddenly imposed another freeze on construction. On 14 September 1954 the JCA received orders from the secretary of defense that, other than honoring previous commitments, all contracting activity was to cease as of 28 September.[49] General Nold protested vigorously, predicting serious negative consequences for the construction program, which had a total anticipated value of $31 million. About $800,000 had already been spent on completed design for projects along the line of communications, and the JCA was poised to let contracts for construction. Design had required intensive and wide-ranging coordination with French government agencies, and their staffs had been augmented in anticipation of the coming construction load. Postponement would mean that these agencies would lose personnel again. Nold predicted that American military construction would suffer long after the freeze was lifted. The protest had no apparent effect; the freeze remained in effect until January 1955.[50]

The $60 million pipeline for petroleum products and fuel (petroleum, oil, and lubricants) was the JCA's single most expensive project in France. The pipeline ran from Donges and Saint-Nazaire, north of the Loire River's mouth, to Metz, a city near the German border just eighty miles west of the Rhine. When finished, the pipeline extended from the Atlantic across northern France for almost 400 miles and linked up with a similar pipeline into western Germany. In June 1953, after roughly two years of negotiations, France accepted both governmental and technical agreements covering the construction, operation, and maintenance of a pipeline, controlled by the United States, across the French countryside.[51] Work began on the Donges-Metz pipeline in May 1954. The French showed a willingness to adjust to urgent demands when they allowed construction to begin completely at the contractor's expense and with only the assurance from the French administrative officers that formal contracts would follow. About one-sixth of the segment between Donges and Melun was laid before any papers formally cleared French ministries.[52]

Building the pipeline was a complex undertaking, involving facilities for offshore unloading, pumping stations, and storage tank installations at intervals across France. The line itself consisted of ten- and twelve-inch pipe

(valued at more than $6.8 million) at a depth of 2.5 feet below ground and protected under roadways by steel sleeves. An undersea segment connected the off-shore unloading operation to land; and eight booster pumping stations moved petroleum products through the line under pressure of a maximum 1,250 pounds per square inch, providing a capacity of 2,450 gallons of gasoline a minute. The pump houses were blast- and splinter-resistant and spaced at about forty-mile intervals. The system included storage tank facilities with a capacity exceeding 5 million barrels. The tanks at each storage farm had to be dispersed and positioned to minimize destruction by an attack using either atomic or conventional bombs. Forward area tank farms were partially buried for added protection.[53]

The construction freeze of late 1954 hindered progress, but by mid-1957 the JCA had completed the work and the pipeline began operating. In September 1957, by agreement with NATO, a linking of pipelines allowed USAREUR to transport fuel from the Atlantic across France into Germany and even to units east of the Rhine.[54] With this line the U.S. military could transport fuel equal to the capacity of 6,000 railroad tank cars from the Atlantic to West Germany in twenty-four hours.[55]

The JCA also supervised a $60 million program to construct medical facilities for both the Army and the Air Force. In fact, the JCA inherited the hospital program from the Communications Zone, which had been unable to complete it. Construction for the line of communications across France included a requirement for 15,000 fixed hospital beds as essential to support U.S. forces in Europe in the event of an armed conflict. To meet this requirement, USEUCOM requested funds for standby hospital facilities that could be used as troop billets in time of peace and converted within forty-eight hours into fully operational field hospitals. Because funds for troop barracks were more limited than for medical facilities, the plan had the obvious advantage of putting readily available money to use for less easily fundable facilities.[56]

The plan had less noticeable disadvantages that became factors in retarding the development of adequate billets for the American soldiers assigned to France. The hospital housing program conflicted with the appropriate placement of housing facilities for the troops. The majority of troops were concentrated in twenty or more widely dispersed locations throughout France, whereas hospital space had to be concentrated away from military targets in locations not related to other operating facilities. This put one-third of the housing spaces in the wrong place and made the establishment of a coherent troop housing program a difficult problem. Moreover, the technical requirements associated with hospital design subjected the program to repeated delays, which under the dual-purpose plan also delayed completion of troop housing. The French also had very definite issues of their own, including the desirability of locating the U.S. military hospitals in places that gave them long-range value to the French economy and medical services. Additionally, duplication of Army and Air Force hospital programs provoked skeptical reviews in Washington and prompted two suspensions of all work on the hospital/housing construc-

tion during 1952. Finally, Congress delayed fiscal year 1953 funds for the construction until it had reviewed all details of the plan for their dual utilization. These delaying factors were a primary cause in leaving fully 30 percent of the troops assigned to the Communications Zone in tents during the winter of 1952–1953.[57]

The JCA received the directive to construct dual-purpose hospitals in March 1953, but it took until October to clear the way for the award of design contracts. Construction began in 1954 after the JCA awarded several multimillion-dollar contracts for the work. The Army program projected eleven military hospitals and three medical depots at intervals between the Atlantic and Germany's western frontier. (A twelfth hospital, in the Paris area, was cancelled in 1956.) By July 1957 about 40 percent of the planned construction for the hospital program was completed, and by 1958 six of the eleven hospitals were in use.[58]

The overall pace of construction under the JCA's direction intensified late in 1955 because of political decisions in Washington. In July Congress, reacting against the accumulation of unspent money committed to the buildup of forces for NATO, passed Public Law 161 rescinding all authorizations for any construction approved before 1 October 1951 unless funds for these projects were obligated before 1 July 1956. In other words, if the U.S. military planners could not commit the money after nearly five years, they would lose it. The JCA had a substantial backlog of projects for which it stood to lose funding if it could not push them through the process of approval and contracting before the deadline. Approval, however, depended on the French.

The JCA's director, General Robinson, met with the French Liaison Mission on 22 December 1955 to explain the implications of the new legislation. He presented a list of critical items with estimates of when architect-engineer plans and specifications could be ready. He asked the French whether they would take special steps to shorten the time involved in their normal review of these projects. The French agreed to cooperate fully, offered suggestions on how to accomplish the goal, and worked out a set of procedures to expedite the processing. As a result of this exemplary cooperation, the JCA was able to let work contracts for $29.5 million between 1 January and 30 June 1956; only $1.3 million in project funds was not obligated before the automatic cutoff imposed by Congress.

By the summer of 1956 the JCA was spending $8 million a month on construction for the Army and Air Force in France. The backlog of designed work waiting for award of construction contracts had been reduced from $73 million on 1 July 1955 to just $18 million a year later. The monies obligated for the fiscal year ending 30 June 1956 were the highest in the JCA's history; and the amount for June, just over $60 million, exceeded that of any earlier month. In a letter to the U.S. ambassador in Paris, Robinson praised "the extraordinary efforts on the part of the French Services to assist the Joint Construction Agency" in completing the contracts before the deadline.[59]

In late 1956, events beyond the JCA's control damaged this spirit of cooperation and the momentum it engendered in the construction program in France. The United States vigorously opposed the incursion into the Suez Canal Zone by French and British military forces in early November 1956. When the United States embargoed oil shipments to France to exert pressure on France to withdraw from the Canal Zone, the French government responded in kind, cutting off petroleum for U.S. military construction projects. The American engineers made emergency arrangements so that French contractors working on other projects could receive fuel from local U.S. military sources. The French government then established its own system of fuel rationing. Fortunately, delays on the most important projects turned out to be minimal.[60]

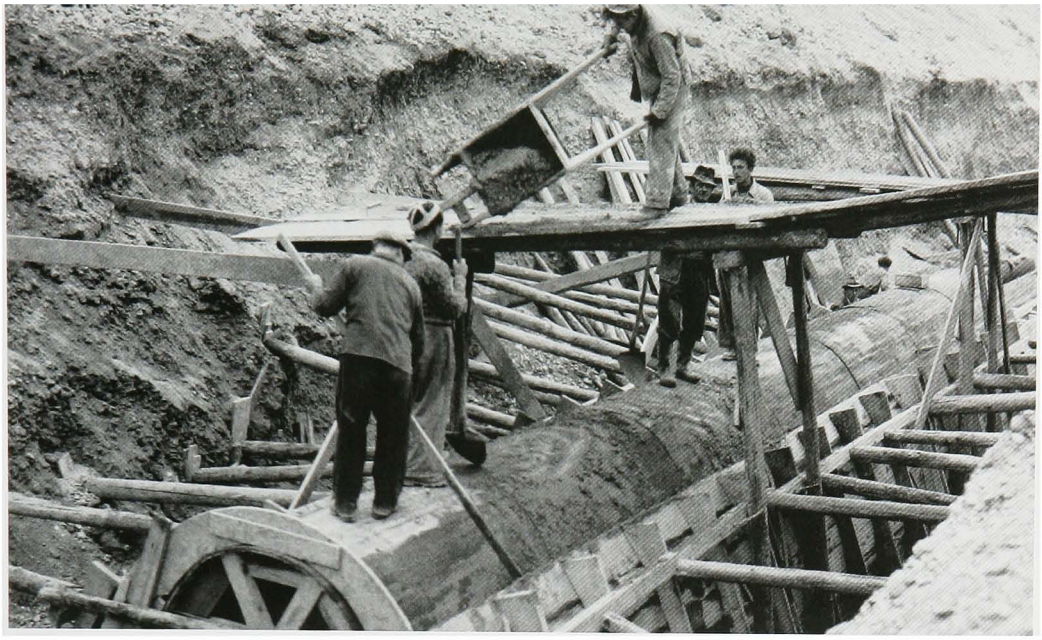
Joint Construction Agency outside France

The Department of Defense had planned for the Joint Construction Agency to manage military construction in areas outside France. Although nearly consumed with the construction program in France, the JCA began developing plans in March 1953 to undertake work in Austria, Italy, Greece, and Turkey.[61]

The Engineer Division of the United States Forces, Austria (USFA), had directed construction in Austria and Italy immediately after the war. When the Berlin Blockade prompted the United States to redistribute its troops to reduce the numbers in Vienna, USFA constructed housing and rehabilitated facilities such as Bindermichl. (*See Chapter 2.*) As work in Bindermichl approached completion, USFA undertook another major project to build a regiment-size camp in the U.S. zone. The site, which eventually became Camp Roeder, was initially an empty field outside of Salzburg with neither structures nor utilities, forcing the Army engineers to build the camp from scratch. To manage the estimated $90 million in contract work, USFA established the 7614th Construction Detachment, an organization composed of American officers and enlisted men and more than thirty DACs and civilian Austrian nationals.

In 1951 the command assigned engineer troops to construct roads and electrical lines. It consigned the majority of the construction to Austrian contractors. Over the following years there arose a small military city, initially for 5,500 soldiers, consisting of roads, sewer lines, waterlines and wells, electrical lines, barracks, mess halls, bowling alleys, theaters, clubs, warehouses, and similar facilities. Work on Camp Roeder progressed satisfactorily, but it remained incomplete when the United States turned the facilities over to the Austrian national government in 1955 as Austria regained its sovereignty and the occupying forces of the four wartime Allied powers withdrew from the country.[62]

When the JCA began operations outside of France in 1954, it proposed that construction in both Austria and Italy pass by stages to a district office to be set up in Livorno, Italy. In March 1954 the JCA assumed technical authority over construction for the Army and the Air Force in



Building Camp Roeder involved installing and constructing all utilities, including a sewer system.

Italy and Austria, but the Engineer Division of USFA continued its management functions. In October the United States and Italy signed a new memorandum of understanding to govern U.S. military construction in Italy; in December the JCA opened the Southern District office in Livorno, incorporating much of the existing engineer detachment there into the JCA staff. (*See Chart 4.*) Because construction in Austria was already 90 percent complete and declining rapidly as Austria moved toward full independence, the JCA opened no office there.[63]

The Austrian State Treaty of 15 May 1955 reestablished full Austrian sovereignty and provided for the evacuation of all occupying military forces from the country. To fulfill the terms of this four-power agreement, the Department of Defense decided to move U.S. military forces from Austria to Italy, making rehabilitation of facilities for the troops in Verona and Vicenza necessary. The Army command in Italy, called the Southern European Task Force (SETAF), received an allocation for rehabilitation and a small amount of new construction. USEUCOM directed the JCA to support SETAF by supplying technical assistance.[64] In addition, the JCA monitored a modest amount of work in Italy for other services—five airfield sites for the Air Force and warehousing, maintenance shops, and community facilities in Capodichino and Sigonella for the Navy.[65]

The JCA took over responsibility for construction in Greece and Turkey about the same time it assumed its responsibilities to support SETAF in

Table 2

Workload of the U.S. Engineer Group, Turkey
1955 and 1956

Project	31 December 1955 ($ million)	31 December 1956 ($ million)
Design	$22.901	$ 16.259
Out for bid	0	2.313
Under construction	13.143	19.960
Completed	16.210	18.631
Inactive	13.409	9.031
Current working estimate	71.696	66.731
Funds available	37.173	44.149

Source: James S. Arrigona and W. R. Karsteter, "USEUCOM Joint Construction Agency, Historical Report, 15 January 1953–31 July 1957," p. 120.

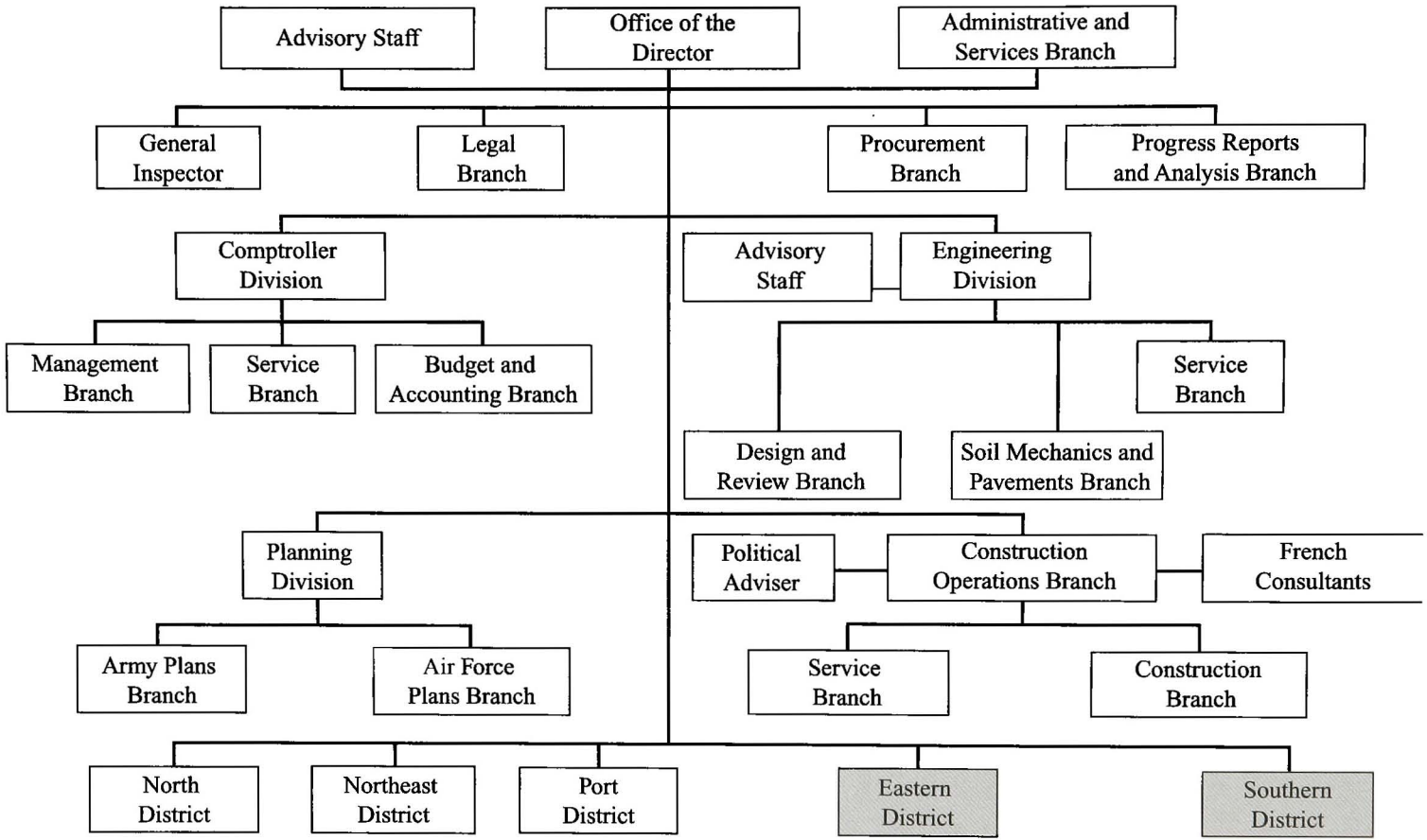
Italy. In February 1954 the agency opened the Eastern District office in Athens to supervise work in Greece and in Turkey (*Chart 4*); by year's end the office had 123 employees. By 1955 the Eastern District had contracts for $52 million in work, of which approximately two-thirds was under construction. (*Table 2*) Future contracts were projected at less than $2 million.[66]

The active projects in the eastern Mediterranean in 1956 included a trailer park, a hospital, a school for dependents, a commissary to support the Iraklion airfield on the Greek island of Crete, and additional work for the Athens airfield. The office in Greece also managed the programs that had been set in motion by The United States Engineer Group (TUSEG) in Turkey in 1950. With the reorganizations, TUSEG's staff came under the authority of the JCA and its work in progress, involving almost exclusively programs for the Air Force, continued much as before. In all, twenty-two separate projects remained active in Turkey in December 1956, including communications facilities, personnel support facilities, and a variety of other small undertakings.[67] Through its management of construction in Greece and Turkey, the JCA supported the American military mission to the very borders of the Soviet Union.

The Phaseout

The JCA succeeded in resolving the confusion that had characterized the early development of the line of communications in France. In

Chart 4: Organization of the Joint Construction Agency, September 1955, Depicting the New Eastern and Southern Districts



Shaded boxes indicate new districts.

early 1953, when the JCA took charge, American soldiers in France still lived in tents and moved about on muddy paths and roads. By 1957 the tents had been replaced by barracks, the roads had been paved, construction in place exceeded a half-billion dollars, and the JCA actively supervised a construction effort that stretched from the Atlantic to the eastern Mediterranean.[68]

By the mid-1950s the American military construction program in Europe had stabilized. In France the JCA had asserted control over what had been a chaotic program. Air Force construction had slowed, and it would all be under contract by 1958. West Germany had been granted sovereignty and admitted to NATO, and Deutschmark funding was scheduled to run out at the end of 1957. In effect, construction for the U.S. forces that flooded into France, Germany, and the European Theater had caught up with immediate needs.

As early as autumn 1955, talk circulated in Washington about reorganizing the Joint Construction Agency. The U.S. forces in Europe no longer needed such a high level of management authority for construction.[69] Strategic realities also had changed. As West German troops augmented NATO forces and tactical nuclear weapons became available, the line of defense moved east from the Rhine to the border with East Germany.[70] It became clear that, with the development of more sophisticated Soviet weaponry, the line of communications across France was vulnerable. Because Soviet air superiority would prevail in the early days of any aggression from the east, the flow of supplies across France, dependent on French railroad lines, could be disrupted and stopped from the air. Stock dispersion also was insufficient to ensure preservation of the materials stored. In any event, it was likely that the Soviets knew where supplies were.[71]

France's objections to the presence or passage of foreign nuclear weapons in, over, or through its territory also threatened the viability of the line of communications. Beginning in late 1955, the French government sought to renegotiate the terms of the agreement for the line of communications to exclude nuclear weapons from its territory. Simultaneously, tactical nuclear weapons took on increasing importance in NATO's strategic planning.[72] Moreover, the Suez crisis of late 1956 had amply demonstrated that American and French national interests did not always run parallel. The intense clash of interests over Suez reinforced the traditional French tendency to maintain an independent military posture.

Economic considerations also modified thinking about logistics. Supplying U.S. forces in Germany through France cost substantially more than through a North Sea port. In 1956 the United States made temporary arrangements with the government of the Netherlands to open a port facility in Rotterdam. From there, shipments could be made south at considerable savings by using the Rhine. The United States replaced this temporary arrangement with a permanent agreement in March 1957. Using port facilities in both Rotterdam and Bremerhaven, military planners revised the expectation that USAREUR would receive 70 percent of its supplies through the line of communications across France. Instead,

they viewed France increasingly as a depot and storage area and as an alternative or emergency supply route. By the end of 1957 only 40 percent of U.S. military supplies—except petroleum products, of which all passed through the Donges-Metz pipeline—came through France. Perhaps equally important to American planning as the availability of alternate port facilities were signs that the Soviet Union had reduced its troop strength.[73]

Adding to this ferment, misgivings resurfaced in the Office of the Chief of Engineers in Washington and at the JCA headquarters about the joint nature of the agency. The assistant chief of engineers for military construction, Maj. Gen. David H. Tulley, believed that the JCA's successes in Europe had come despite its joint nature, not because of it. The Army engineers had responsibility for all military construction in Europe, and Tulley argued that any construction agency executing that work ought to be controlled by the Army engineers; the JCA's joint character should be ended and construction should return to an Army command. In correspondence with the chief of engineers, Lt. Gen. Samuel D. Sturgis, General Nold (recently retired) argued that the JCA, which he had commanded between 1953 and 1955, "got along during my time primarily through your generosity in loans of personnel and your extraordinary aid in recruitment of all categories." Nold concluded, "This situation cannot continue indefinitely." Parallel recommendations that the agency be reorganized circulated during 1956 among the JCA staff, although they were never forwarded to higher levels of command.[74]

Given the progress made in constructing facilities for the Air Force and the Army in France, the sharp decline anticipated for construction budgets in the late years of the decade, and changes in the economic, diplomatic, and strategic situations, the dissolution of the JCA appeared likely. During the first quarter of 1956, the JCA consolidated its Southern and Eastern Districts into a single unit headquartered in Athens, Greece. Before the end of 1956 further consolidation left the Southern District, now in Livorno, Italy, as the only JCA office in the area. These moves eliminated eighty-seven positions and saved about $388,600 in salaries, allowances, and overhead costs. On 1 November 1956, the agency consolidated its three district offices within France into the North District, with offices located with the JCA headquarters near Paris. This move further reduced manpower by 199 spaces at an estimated annual savings approaching $1.1 million.[75]

On 1 August 1957, the Joint Construction Agency was abolished. Responsibility for military construction in Italy, Greece, and Turkey passed to the Mediterranean Division under the Office of the Chief of Engineers in Washington. Responsibility for military construction in France passed to the United States Construction Agency, France (USACAF), a new agency under USAREUR constituted from the JCA's North District. Col. Lynn C. Barnes, who had commanded the North District under the JCA, was named as the first director of USACAF.[76]

Construction for the U.S. military continued in France for several years, but at a greatly reduced rate. In 1958 USACAF awarded $24 mil-

lion in contracts. The surplus commodity housing program that had been planned and contracted under the JCA accounted for a substantial part of USACAF's activity. In addition, USACAF supervised the construction of Class V depots, designed for the storage of atomic weapons. By late 1961 USACAF's work was so reduced that its staff had decreased from 530 to 80. On 1 October 1961, USACAF was redesignated as the U.S. Army Field Engineer Office, France, to handle administrative matters such as claims and recoupment of funds arising from the earlier programs. Construction that needed to be done came under the purview of the Army engineers of the Communications Zone.[77]

The U.S. Army engineers adjusted their definition of Europe in 1957 to correspond to the reorganization of engineer assets. For construction purposes, Italy, Greece, and Turkey came under the purview of the Mediterranean Division of the U.S. Army Corps of Engineers when the division relocated from Morocco to Livorno. The chief of engineers in Washington had direct command authority over the Mediterranean Division. The Communications Zone in France controlled construction in France through USACAF. The commander in chief of USAREUR exercised command authority over the Engineer Division of his logistics office and in 1956 created a distinct engineer organization, the U.S. Army Construction Agency, Germany, to supervise construction throughout that country. It is through this agency and its successors under USAREUR that the story of the management of U.S. military construction in the newly defined Europe continues.

5

MANAGING CONSTRUCTION IN GERMANY, 1956–1966

Between 1950 and 1955 the Federal Republic of Germany financed the military construction program that supported the North Atlantic Treaty Organization (NATO) and the expansion of U.S. forces in West Germany. Once the Western Powers recognized the Federal Republic diplomatically in May 1955, the occupation officially ended and the West German government had no further obligation to pay the costs of the U.S. troops on its soil. To manage construction in Germany, the United States created a new entity, the U.S. Army Construction Agency, Germany (USACAG). Operating in a new fiscal environment, USACAG managed the continuation of the construction programs begun in the early 1950s. It also oversaw the design and construction requirements necessitated by the introduction of tactical and strategic missiles into Europe in the late 1950s. Then, when the Soviet Union threatened the independence of Berlin, USACAG managed urgent construction to defend the city.

The German Environment

For the first time since 1945 the U.S. military had to work with a fully sovereign German state that insisted on controlling construction within its territory. Direct contracts awarded by the Army during the early 1950s had overtaxed the German economic and social systems, provoking the extremes of excessive profit and bankruptcy among local construction companies. Similar economic and social consequences had troubled the French construction sector during the buildup of the line of communications.[1] Since 1953—even before the formal end of the occupation of Germany—the West German government had insisted that its own *Deutsche Bundesbauverwaltung* (German Federal Construction Administration) participate in an increasing share of the construction financed with Deutschmarks. During 1953 about 30 percent of the total value of United States Army, Europe (USAREUR), construction contracts went to the *Deutsche Bundesbauverwaltung*, which

then awarded the contracts to construction firms. During the 1954–1955 program year, the amount approached 40 percent.[2] Once sovereignty became a reality in 1955, all U.S. military construction became subject to German law and the *Deutsche Bundesbauverwaltung* became the conduit for both design and construction work for the U.S. military. In 1956 the Federal Republic's Ministry of Finance created the *Bautechnische Arbeitsgruppe* (Technical Construction Working Group) to coordinate American and other allied military construction programs at the German federal, state, and local levels.

As USAREUR's agent, USACAG dealt directly with the Ministry of Defense or the Ministry of Construction in Bonn to develop an agreement for each new construction program. The agreements were international and intergovernmental in character in that they were between agencies of sovereign powers; but each one was specific to a particular construction program, such as Nike missile installations or housing for troops or military families. The construction agreements were subordinate to broader diplomatic accords, such as the NATO Status of Forces Agreement or the *Dollarbaukontrakt* (Dollar Construction Contract). USACAG's role always depended upon a higher authority, such as USAREUR, and at the completion of any formal discussions it submitted copies of accords for review by the secretary of the Army and the Department of State. The need to negotiate an implementing agreement on each new program delayed the construction; at times each installation site had to be negotiated individually. The negotiations were, however, an unavoidable consequence of doing business in a host nation. William E. Camblor, the USACAG director, proved particularly adept at managing these negotiations and remained involved in them with Germany and other NATO host countries for over four decades.[3]

Any implementing agreement between USACAG and the Federal Republic's ministries of defense and construction in Bonn was only the beginning. Each agreement next passed through the Federal Ministry of Finance's *Bautechnische Arbeitsgruppe,* which maintained its offices in Frankfurt. The federal ministries then issued orders to state construction offices (*Oberfinanzdirektionen*), which in turn passed the orders for execution to a local office (called *Landesbauamt, Staatsbauamt,* or *Finanzbauamt,* depending on which state it was in). USACAG's contracts for U.S. military construction were with West German government agencies at the federal level, not with the firms executing the work.[4] By contrast, states and localities—rather than federal agencies—had jurisdiction over all contracts that engaged architect-engineer firms or builders. The entire system gained the label indirect contracting.

The *Dollarbaukontrakt,* negotiated in 1956 and modified in 1961, coupled with the Supplementary Agreement to the NATO Status of Forces Agreement signed with West Germany in 1959, governed the indirect contracting system and formed the basis for all U.S. dollar–funded design and construction executed in the Federal Republic.[5] During USACAG's early years the Germans still allowed many of the dollar-funded projects

to be contracted directly. The new West German government progressively expanded the indirect contracting system so that by the early 1960s indirect contracting had become the standard operating procedure for construction in Germany. It remained for decades the aspect of engineer activities in Europe least understood by the people not directly involved with it.[6]

USACAG Organization

In organizing for the transition of U.S. forces from occupying power to ally, the U.S. commander in chief for Europe delegated execution of dollar-funded construction in Germany to USAREUR's commander in chief. Well before Deutschmark financing ended, planners had contemplated creating a new construction organization.[7] They were motivated by severe budgetary pressure as well as by the change in West Germany's international status and responsibilities. Although its obligation to support U.S. military construction was ending, the Federal Republic nonetheless agreed to provide Deutschmark funding for construction obligations contracted before May 1955 so long as projects were completed by the end of 1957. During fiscal year 1956, despite this commitment, German support for the U.S. military dropped by nearly $500 million. Because the bulk of these Deutschmark funds had gone into wages and utilities, the U.S. military had to trim staff and consolidate services. Lacking the funds for pay, the Army released 24,000 German employees in fiscal year 1956.[8]

To manage contract construction for the U.S. Army, on 1 July 1956, USAREUR activated its Construction Agency. Within a short time the organization, subordinate to USAREUR's Engineer Division but with headquarters in Frankfurt, settled on the name U.S. Army Construction Agency, Germany.[9] USAREUR removed responsibility for contract construction from the area and post commanders and placed it under this single agency. (*See Chart 5.*) Centralized administration for contract construction remained characteristic of U.S. forces in Europe from 1956 onward.

The new organization enabled USAREUR to reduce personnel. Of the 1,037 persons in construction employed in the area commands, by 1 January 1957, these commands retained only 76. USACAG operated initially with about 210 employees, producing a net saving of more than 750 places. USAREUR expected a central construction agency to manage the dollar-funded contracts more consistently than the area commands. Furthermore, USAREUR saw an advantage in being able to transfer many of the command and operating responsibilities of its Engineer Division to USACAG, thereby allowing the USAREUR engineer to concentrate on his staff responsibilities as adviser to the commander in chief.[10]

USAREUR appointed an American civilian, Camblor, to direct USACAG. Before World War II, Camblor had worked in the New York District of the Corps of Engineers. Mobilized as a reserve officer early in the war, he had landed at Normandy shortly after D-Day and moved

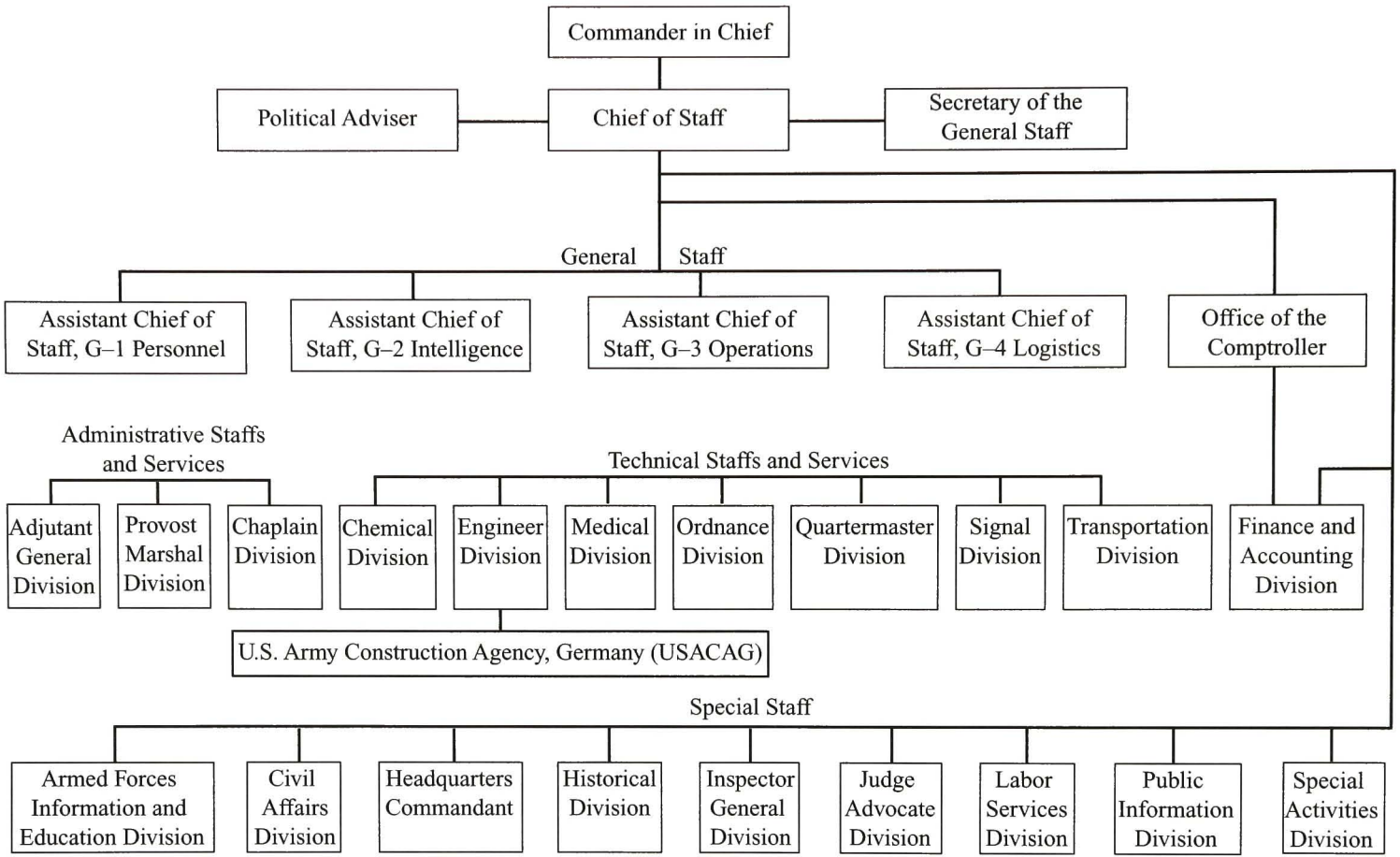
through France and Belgium with the Communication Zone's Advance Section engineers. In 1947 Camblor resigned his commission and took a position in the Office of the Theater Chief Engineer. By 1950 he had become deputy chief of the Construction Branch. He served under two European Command engineers, Brig. Gen. David H. Tulley and Brig. Gen. Frank M. Albrecht, during the years that U.S. forces expanded rapidly. As West Germany approached full sovereignty, Camblor's proficiency in German, knowledge of Army engineer operations, and ability as a negotiator gave him a significant supporting role in the talks between the United States and the Federal Republic. He served as a resource person on engineering issues in discussions leading to the agreements governing U.S. military construction in Germany—the *Auftragsbauten Grundsätze* 1955 and the *Dollarbaukontrakt* in 1956.[11]

William Camblor, shown here in the 1970s, was the first director of USACAG.

Although barely forty years old in 1956, Camblor had served as the highest ranking civilian in the USAREUR Engineer's Office for several years. Tulley, who esteemed Camblor's talent and service, had moved to the Office of the Chief of Engineers in Washington; but he remained in close contact with affairs in Europe. Tulley and his successor as USAREUR engineer, Albrecht, gave Camblor strong support for the position of director of USACAG, as did Camblor's immediate military superior in Heidelberg, Brig. Gen. Charles McNutt.[12]

Camblor's appointment as director of USACAG made the organization noteworthy in four ways. First, he was the only civilian ever to command an Army engineer agency of such scope. Second, because he was not subject to the military cycle of rotating assignments, Camblor brought continuity during his seven-year service that gave him increased influence in dealing with his counterparts in the local German agencies responsible for supporting U.S. military construction. Third, Camblor had an aptitude for European languages. He conducted formal negotiations in English aided by an interpreter and a legal adviser, but he established rapport with officials in Europe by conversing freely with them in either German or French. Fourth, as a Cuban-American, Camblor commanded USACAG at a time when it was unusual for persons from ethnic or racial minorities to

Chart 5: Organization of Headquarters, U.S. Army, Europe, 30 June 1956



hold executive positions in American institutions. It had been less than a decade since President Truman ordered the military to integrate. Although the military responded with greater speed than many other segments of American society, it would still be many years before another member of a minority group achieved a comparable position of leadership in the Corps of Engineers.

Camblor set up headquarters for USACAG in Frankfurt in the summer of 1956. He quickly selected fourteen people and took them to Paris to the headquarters of the Joint Construction Agency, where they spent a week learning the regulations, rules, and procedures. He then returned to Frankfurt and began recruiting personnel, drawing particularly on those who had served in the USAREUR engineer's office in Heidelberg or with engineer offices in the area commands. USACAG's staffing level fluctuated between 210 and 250, including both the Central Office staff and the staffs of district offices.[13]

Camblor brought John Tambornino from Heidelberg to USACAG as chief of engineering. Tambornino already had over twenty years in government engineer positions, beginning in 1934 when he joined the Corps of Engineers in the United States. From 1940 to 1942 he had worked in Panama on the design of the third set of locks for the canal. He had come to Germany in 1951 to serve in the post engineer's office in Heidelberg and then in the USAREUR engineer's office. Tambornino served as chief of engineering in USACAG and successor commands until he retired in late 1974.[14]

Camblor recruited H. Jace Greene from the Southern Area Command in Stuttgart.[15] Active as an engineer in military communities in Germany since 1946, Greene had turned Bundesbahn locomotives into a temporary heating plant for military family housing in Kornwestheim. Greene moved from chief of construction for Southern Area Command to chief of construction for USACAG.

Transfers came from other Army engineer offices throughout Europe. In 1957 Saul Fraint, who had worked in Austria, Italy, and France, left the Joint Construction Agency and joined USACAG as Greene's deputy in the Construction Division. Fraint became head of the Technical Engineering Branch in 1958 and served in varying capacities before his retirement in 1974.[16]

Camblor also recruited engineers just arriving in Europe. Paul Friesch, for instance, had seen Germany at the end of World War II but harbored a desire to see it again in better times. After completing his professional education in the United States, he worked in the Detroit District of the Corps of Engineers, spending a good deal of time on designs of facilities in support of new missile systems. He applied for a position in Germany and was accepted; but when he arrived in September 1956, the job had been eliminated. He followed a suggestion and called Camblor, who immediately offered him a position with USACAG. Friesch spent most of the rest of his career in Europe, working with USACAG and its successor and then with NATO in Brussels, from which he retired in 1990.[17]

Like Friesch, Louis Brettschneider had been looking for a way to work in Europe. After graduating from college in 1944, Brettschneider had joined the U.S. Merchant Marines. A job with the Joint Construction Agency in Paris disappeared, but he too found his way to Frankfurt; he joined USACAG in December 1956. A technical engineer of considerable ability, Brettschneider continued with USACAG's successor organizations into the 1990s.[18]

For every Department of the Army civilian (DAC), USACAG's staff included two Germans (local nationals) in professional and clerical support capacities. The Germans' reasons for seeking jobs with the U.S. military varied. Some, like Hasso Damm, developed a sense of loyalty and a strong commitment to the organization. A young student already trained in classical Greek and Latin, Damm hoped to earn money to continue his studies in law when he took a job as an estimator with USACAG in mid-September 1956. In addition to his academic interests, Damm was also a qualified stonemason, which gave him a range of practical experience that served him well as USACAG's first estimator.[19] Because USACAG had no legal branch, Camblor asked Damm to research legal issues associated with applying the *Dollarbaukontrakt* under which U.S. military construction operated. In addition to his estimating work, Damm conducted the legal research, although he never returned to his formal studies. He stayed with USACAG and came to head the Estimating Section that developed.[20]

Another young German who obtained employment with USACAG followed a different path. Georgi Reitzel received an engineering degree in 1949. Because of the limited opportunities for professional employment in Germany, he spent several months working as a construction laborer and carpenter. Hired as a draftsman for the Army at Tompkins Barracks in Schwetzingen, Reitzel made a deal to teach one of his superiors German in exchange for English lessons. In 1956 he was working at Headquarters Area Command in Heidelberg, and he became one of the first appointees to USACAG's Engineering Division. In March 1962 Reitzel left USACAG to form his own contracting firm. Over the next thirty-five years he won a variety of contracts from USACAG and its successors, from NATO, and from West German government construction agencies. Reitzel considered his experience at USACAG fundamental to his later success in business.[21]

Germans employed by the U.S. military came under different work rules than those applied to DACs. These work rules changed as West Germany emerged from the occupation. Between 1948 and 1952 post commanders were responsible for the salaries and social insurance surcharge for all personnel paid in Deutschmarks. Beginning on 1 July 1952, the United States paid each employee's wages to the German *Länder* (states). The *Länder* then disbursed the funds.[22] In 1954 the United States accepted an agreement that affirmed the right of German workers to belong to unions. The agreement exempted U.S. forces from German civil laws that mandated "works councils" in industry. USAREUR, however, authorized works councils for its organizations employing Germans, limiting their

scope to the consultative role of making suggestions and presenting grievances and complaints on working conditions.[23]

USAREUR negotiated the terms of the local nationals' employment with the Federal Republic for all its subordinate organizations, including USACAG. In 1955 allied forces in Germany agreed to establish uniform pay schedules and policies and a 48-hour, six-day workweek as standard for all German employees. In August 1957 USAREUR introduced a 45-hour, five-day workweek.[24]

Because so many German nationals joined USACAG at the start, their influence in the small organization was significant. Many stayed with the Army engineers for their entire careers, despite improved employment opportunities in Germany. The German employees felt they were valued as an integral part of the organization. Many American professionals viewed their German coworkers as the key to continuity in the organization and as a vital element in USACAG's operation.

USACAG had offices in an old, two-story, wooden, prefabricated building behind the officers' club at the rear of the I. G. Farben building in Frankfurt.[25] Camblor set up the organization on the model of a stateside Corps of Engineers district, where the office of director was comparable to that of a district engineer. Camblor and his deputy, at the outset a lieutenant colonel and later a full colonel, were the only authorized contracting officers. Camblor operated with a small special staff, an advisory and administrative staff to support the organization as a whole, and a technical staff to supervise design and construction.[26] (*Chart 6*)

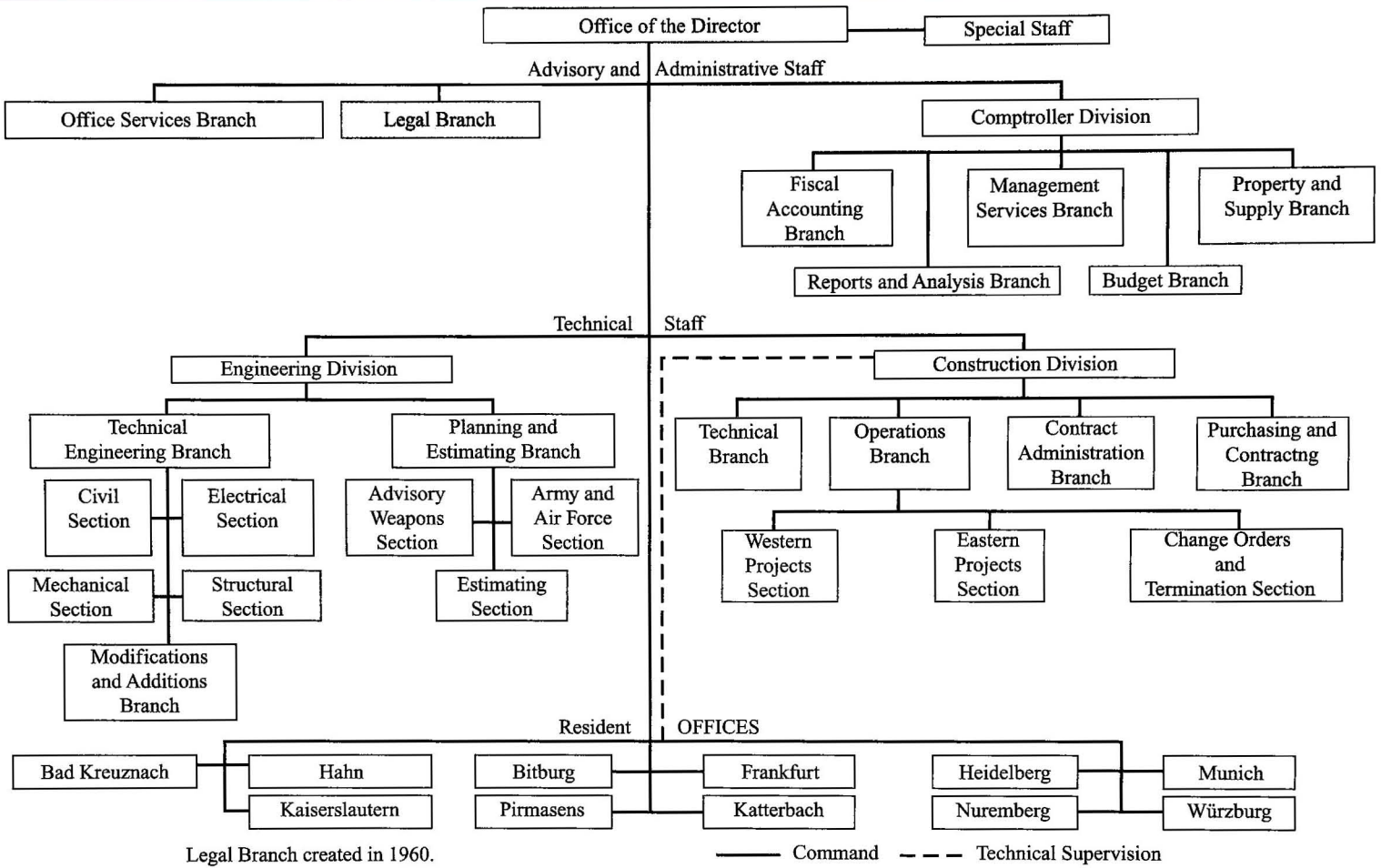
USACAG's assigned task was to execute the Army's (and later the Air Force's) construction programs within the entire Federal Republic of Germany. This marked a contrast with the area commands, which had handled Deutschmark construction on a regional basis. For fiscal year 1957 USACAG executed 35 percent of the construction projects budgeted by USAREUR. Repair and utilities agencies handled 60 percent of the projects, and troops and combat engineer units handled the remaining 5 percent. By 1960 USACAG, at the direction of the commander in chief of USAREUR, had taken on responsibility for construction in other areas of Europe beyond Germany.[27]

USACAG Projects

The projects under Deutschmark funding included community support facilities and family housing.[28] In fiscal year 1957, USACAG's first year of operation, Congress cut the appropriated funds for Military Construction, Army, from a projected total of $11.5 million to around $2.2 million and reduced the number of projects from twenty-eight to nine. Total construction placement, including projects using Deutschmark funds, amounted to around $5 million for the year.[29]

In December 1957, reacting to the military implications of the Soviet launch of *Sputnik*, the NATO Council decided that "stocks of nuclear warheads would be established in Europe and ... nuclear delivery weapons,

Chart 6: Organization of U.S. Army Construction Agency, Germany (USACAG), ca. 1961, Depicting the New Legal Branch and Eleven Resident Offices



including intermediate-range ballistic missiles, would be placed at the disposal of SACEUR [Supreme Allied Commander, Europe]."[30] To implement this decision, the United States increased its defense spending. Work on missile sites and installations became a main part of USACAG's construction program. Construction placement more than doubled for fiscal year 1958, to $11.6 million, as the organization assumed responsibility for construction to support the new weaponry. In fiscal year 1959, the first year of the Nike air defense missile program, construction placement rose to $13.6 million. By fiscal year 1961 it had reached about $19 million as the Hawk and the Mace missiles were also introduced into Europe.[31]

By September 1961 USACAG's backlog of authorized but unbuilt construction totaled $95 million, of which only $16 million was supported with appropriated dollars. The balance ($79 million) was funded by the Germans, principally under the Alternate Construction Program, or by NATO. The U.S. military budget initially funded construction for the Nike, Hawk, and Mace missiles. Subsequently, a substantial portion of the construction for the missile programs qualified for financing under the NATO Common Infrastructure Program and funding for the Nike installations shifted to the NATO budgets.[32]

NATO's Common Infrastructure Program paid for construction of fixed structures and elements of any military installation necessary to support forces committed for the common defense of Europe. The expense was justified as a collective investment for all the nations of the alliance. USACAG worked through the Common Infrastructure Program on projects where U.S. forces would use the facilities.[33] The infrastructure program paid for design and construction; the host nation (on whose territory the installation would be located) acquired the land and provided local utilities. The United States, whose forces assigned to NATO would occupy the facilities, took responsibility for maintenance and for financing any construction features that exceeded NATO criteria.[34]

The construction program for the Nike missiles was the first large NATO program in Europe. The Nike missile, about a foot in diameter and twenty feet long and armed with an explosive warhead, was designed as an all-weather antiaircraft ground-to-air missile with a range of about twenty-five miles. The Nike installation site had four components: the launching area, an electronic command and control center, a radar installation for tracking incoming aircraft, and housing for the troops manning the facility. These components were located within a total area of about thirty acres, but the control area could be as far as five miles away from the launching area. One of USACAG's critical responsibilities was site selection, because the control and launching areas required unobstructed line of sight between them.[35] By the end of the Nike program, USACAG had built some two dozen sites using definitive drawings developed by the Advanced Weapons Section headed by Paul Friesch. These drawings provided the basis for all of the Nike sites eventually built by NATO in Norway, Denmark, Germany, Italy, Greece, and Turkey.[36]

While construction of the Nike installations was still in progress, the United States began the Hawk missile program—also for NATO—and USACAG had construction responsibility in Germany. The Hawks were ground-to-air missiles designed to bring down low-flying aircraft. Eventually about 100 installations were built.[37] Hawk facilities required only about half the space of Nike sites because the structures were concentrated in one location. USACAG also supervised contracts with architect-engineer firms designing Mace missile sites for the Air Force. Air-breathing subsonic Mace missiles were designed for underground shelters capable of surviving an atomic attack and thus allowing a retaliatory strike. Despite the design, the first sites built in Germany were at ground level. Construction for all these weapons systems required attention to the special requirements of sensitive electronic equipment.[38]

In 1958 USACAG also began work on storage sites for atomic and chemical weapons. Other storage sites, built with a humidity control system, warehoused equipment pre-positioned for use by troops who would be flown from the United States to Europe in case of emergency.[39] These new storage sites addressed a major tactical-logistical concern by providing dispersed depot facilities to replace storage heretofore concentrated west of the Rhine during the buildup immediately after the Korean War. The new depot complexes consisted of two major components: a large earth-covered warehouse with a storage area of about 20,000 square feet and a series of about fifteen 2,000-square-foot storage igloos that were highly blast-resistant and distributed over protective terrain. The original construction plan called for nine such depots.[40]

The warehouses created particular problems in community relations. To keep the potentially hazardous materials away from population centers, the warehouses were located in what amounted to public parks—forest areas that Germans valued greatly. Of twenty-one sites considered for the warehouse facilities, eight were finally selected as appropriate. Selection did not mean final acquisition, however. The German state governments owned all the sites in question; they showed great reluctance to turn them over to the U.S. military because it meant a diminution of their forest areas. By October 1961 only two warehouses had been completed, a third was close to completion, and three additional facilities were scheduled for completion by March 1962. Two of the sites still had not been acquired because the community opposed the installations. The Army finally sought expropriation of the land in question, and the governments eventually acquiesced. Once a site became available, USACAG needed eight months to complete the construction.

In November 1960 the German government granted USACAG permission to survey sites for six groups of storage igloos. By grouping up to fifteen igloos in each site, USACAG achieved its goal of locating seventy-four igloos on only five sites. In June 1961 the German government gave permission to proceed with construction at the five sites with the condition that each site be secure from accident or intrusion. The Army agreed, and USACAG designed fencing and fire protection for each area.

The security features added about $27,000 to the cost of each site. Costs averaged another $350,000 each for the warehouses and about $870,000 for each igloo area.[41]

While USACAG supervised this work in Germany, the United States Construction Agency, France (USACAF), managed construction of similar storage facilities near Metz, France. An engineer captain, James C. Donovan, aided by a team of French and American technical specialists, supervised construction.[42] At each site, the French contractor excavated into the side of a hill, set out forms, and poured concrete over reinforcing steel rods. As a young engineer, Donovan was impressed by the quantity of reinforcing rod that went into the structure. "That re-bar was so close and there was so much steel in those walls and in that roof" that it could withstand a significant blast. In addition, the doors had a sensing device that would feel the shockwave of a nearby explosion; trigger a release mechanism; and automatically close the mammoth steel doors, which were "12 or 16 inches deep and extending clear across the entire opening."[43]

USACAG received orders to include these sensitive storage sites in a major electronic radio network called *troposcatter,* a vast communications system that ran 8,300 miles from northern Norway to eastern Turkey. Its eighty-two sites were completed by 1963.[44]

A substantial share of USACAG's work came from the Alternate Construction Program, sponsored by the Federal Republic of Germany. In 1949 local communities had offered to construct alternate facilities for U.S. troops in exchange for the return to its German owners of property previously requisitioned.[45] During the final years of the Deutschmark construction, the Alternate Housing Program provided 3,228 units of family housing for U.S. military personnel. Once the occupation ended in May 1955, continued American use of requisitioned property became even more irritating to the Germans. The two countries resolved the issue with an accord negotiated in 1957 and 1958, whereby the Federal Republic agreed either to buy a requisitioned facility and make it available for use by the U.S. forces or to construct an alternate facility.[46] In August 1960 USAREUR's commander in chief, General Clyde D. Eddleman, and West Germany's defense minister, Franz Josef Strauss, signed an agreement that extended the Alternate Construction Program to facilities not acquired by requisition but wanted by the Federal Republic. German government agencies and contractors accomplished all work under the Alternate Construction Program, with the U.S. military user setting specifications for the new facilities.[47]

The 1960 agreements covered five projects. The Germans constructed about 1,000 family housing units at various locations in West Germany in exchange for the release of about the same number of units. They also rehabilitated and built new facilities at the Illesheim Caserne (completed in 1969) and rehabilitated the former quartermaster installation in Giessen for use by the European Exchange Service (later Army and Air Force Exchange Service). The 4th Armored Division vacated facilities in Ulm for the Germans and received renovated facilities formerly used by

the European Exchange Service in Katterbach. The Germans provided alternate facilities in the Nuremberg–Munich area for administrative and support units in return for American release of the Palace of Justice in Nuremberg and the main customs office and other facilities in Munich.[48]

The Berlin Crisis of 1961

USACAG, like other American military organizations in Europe, owed its very existence to the Cold War. This rationale was never more dramatically evident than in the intensity of USACAG's involvement in Operation BAMBOO TREE in Berlin, a program designed to prepare West Berlin for an airlift if the Soviet Union imposed a second blockade.[49]

West Germany's growing participation in NATO made the leaders of the Soviet Union exceedingly uneasy. Their unease only intensified when, after the Soviets launched *Sputnik*, West Germany agreed to station tactical nuclear weapons on its territory. Each time Soviet Premier Nikita Khrushchev provoked a crisis over Berlin, he warned West European nations that they were risking nuclear annihilation in the event of a war between the United States and the Soviet Union. Far from disrupting NATO, as Khrushchev had hoped, the series of threats to Berlin prompted Britain, Italy, and Greece to authorize the installation of American medium-range missiles in their countries in the summer of 1959.

Two years later, in June 1961, Khrushchev met in Vienna with the new U.S. president, John F. Kennedy. At that meeting and in subsequent exchanges, Khrushchev demanded a German peace treaty, the end of allied occupation of Germany, recognition of East Germany as a state, and establishment of West Berlin as a "Free City," undefended by Western military units. In the absence of a satisfactory settlement, Khrushchev threatened to sign a separate peace treaty with the German Democratic Republic on 1 January 1962 and turn over full control of Berlin to the East Germans. Kennedy responded by requesting that Congress appropriate an additional $3 billion for defense spending and by doubling draft quotas to increase the size of the Army.

As tension over Berlin mounted during the summer of 1961, thousands of East Germans fled from Communist rule simply by passing into the western sector of the city and asking for assistance to fly from there to the West. A total of 22,000 refugees fled in the first twelve days of August 1961.

At 2:00 A.M. on 13 August 1961, under cover of darkness, the East German regime imposed its solution to this drain. Soldiers strung barbed wire barriers along the entire line separating the western sectors from East Berlin. Over the next several days, troops erected a formidable wall of concrete and barbed wire guarded by watchtowers, dogs, and soldiers who had orders to shoot anyone trying to escape. With all eyes on the Berlin Wall, the West and the East seemed poised on the brink of war.

President Kennedy's overt reaction was limited to rhetoric and military mobilization, and he took no steps to remove the wall. Secretly,

however, he ordered Operation BAMBOO TREE. In September 1961, as part of this covert operation, the Air Force instructed USACAG to improve the landing and navigational facilities available at West Berlin's three zonal airports—Tegel, Gatow, and Tempelhof—and at several specific airfields in West Germany. The orders, attributed to Secretary of Defense Robert McNamara, stated that nothing was to stand in the way of the "timely completion" of this mission. USACAG's staff interpreted the charge quite broadly.

Camblor immediately set up an office in West Berlin and surveyed the needs of the airports. USACAG's Engineering Division became the coordinating point for Operation BAMBOO TREE. Ignoring the normal process of paperwork and requisition, USACAG engaged architect-engineer firms in West Germany and construction firms in West Berlin. Design engineers in Frankfurt worked through many nights that autumn preparing drawings and specifications. USACAG engineers literally pulled the designs off the designers' drawing boards, flew to West Berlin, and handed the project specifications to the construction companies mobilized for the job. Bidding was done on the spot. For the most important building, the base for a tower that would house two large generators, Saul Fraint traveled to Berlin with the design drawings. "I gave them these three sheets—that's all there were—and said, 'We need bids on this building. It's for a very important project'—and they knew what it was for—'day after tomorrow.'" He remained in Berlin to receive the bids, compared them, and awarded the contract to Philipp Holzmann, A.G., to start work the next day.[50]

USACAG managed construction at all three allied airfields with good cooperation but little material help from the French and the British. Air Force construction troops and American firms were also involved. Contractors worked around the clock. Support from the West Berliners—who had a clear appreciation of what was at stake—was outstanding. As Khrushchev's 31 December deadline approached, Fraint and Louis Brettschneider sought a meeting with the director of Siemens and his managers to appeal for their support and supervision of a very delicate installation of electrical cable. Fraint and Brettschneider explained that completing the job on time would demand work straight through the Christmas holiday. After listening to their appeal, the director of Siemens replied, "I understand the need, and I will be there on Christmas Day." He then turned to his managers and asked, "Who will join me?"[51]

The same spirit of cooperation that prevailed in the Siemens' boardroom extended to the construction site. About two weeks after construction began on the building to house the generators, Fraint learned that the equipment ordered by the Air Force would not be available on schedule because of a labor dispute in the United States. The Air Force located substitute generators, but they were too long to fit into the building as designed. Rather than take time to redesign, Fraint and Brettschneider flew to Berlin and went to the construction site, where the contractor was about to lay the foundation for the back wall of the building. They

paced off an additional five meters and asked the construction crew to change the specifications on the spot. According to Fraint, the foreman said, "Yes, Sir!" To everyone's relief, when the generators arrived they fit into the redesigned building. By 1 January 1962, the essential work was done. The crisis had also eased. Operation BAMBOO TREE remained in the memory of those involved as a period of intense activity and a source of great satisfaction.[52]

From USACAG to Engineer Element

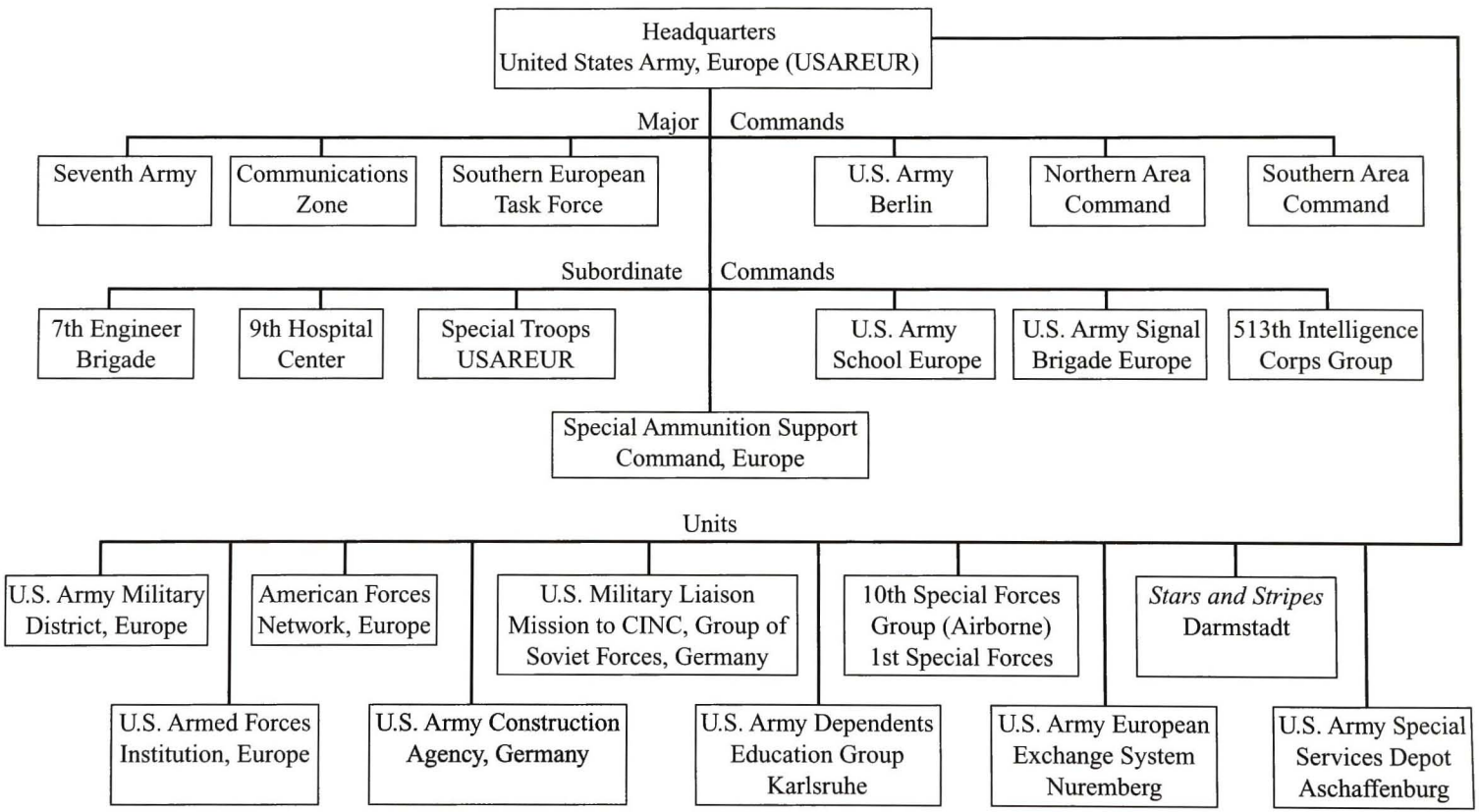
In August 1962, after a record year in construction placement, William Camblor took a year's leave to study at the Industrial College of the Armed Forces at Fort McNair in Washington, D.C. One of five civilian employees of the Department of the Army admitted into the program, he felt it would enhance his credentials. Already a GS–15, he had been recommended for promotion in 1959 but had not received the higher grade. The year at the Industrial College seemed to be an opportunity to advance his career.

About the time Camblor left for Washington, USAREUR reexamined its organization of engineer resources. (*See Chart 7.*) With work declining in France, the maintenance of separate construction organizations for France and Germany seemed a costly duplication. At the same time, some of the colonels who served under Camblor in USACAG bridled at being subordinate to a civilian. They made their feelings clear to the USAREUR engineer in Heidelberg and found a sympathetic ear when Brig. Gen. Howard A. Morris took over that office in January 1963. Morris, who had served as post engineer in Frankfurt in 1946–1947, felt strongly that an engineer officer should direct military construction.[53]

USACAG had been one of several distinctive agencies the Department of Defense organized in the 1950s to manage military construction. In addition to the Joint Construction Agency and its successor, the United States Army Construction Agency, France, the Army activated in 1956 the United States Army Construction Agency, Korea (USACAK), and the United States Army Construction Agency, Japan (USACAJ). In the Pacific the experiment had been short-lived. In a scant year, control of the contract construction resources for the military passed from theater commanders to the chief of engineers in Washington. USACAK and USACAJ were inactivated in June 1957 and their functions taken over by the newly formed Pacific Ocean Division of the Corps of Engineers.[54]

The construction agency in France also disappeared. In October 1961, with the volume of construction declining, a smaller entity, the United States Army Field Engineer Office, France, replaced USACAF. Of the special organizations created in the 1950s to manage U.S. military construction, only USACAG in Frankfurt survived. As the workload in France declined, USACAG's workload increased through the late 1950s, reaching its peak in 1962 at $40 million, more than five times its dollar volume in 1957.[55]

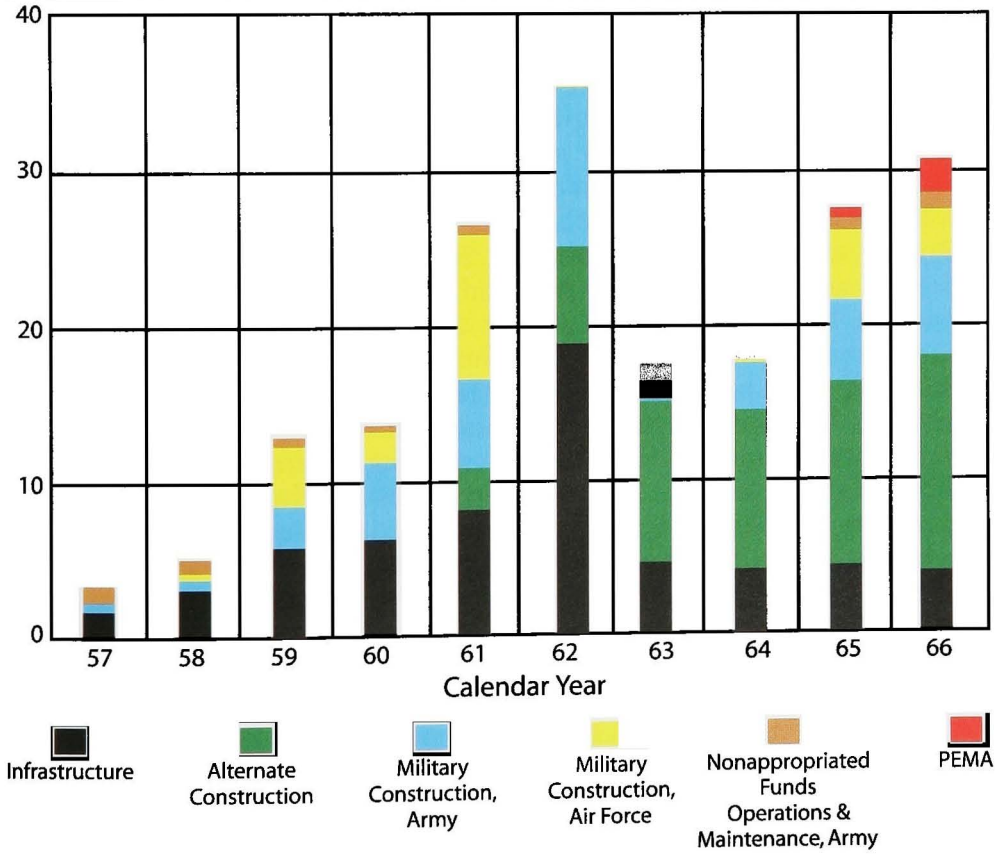
Chart 7: Organization of Headquarters, U.S. Army, Europe, 1963, Just before the Dissolution of USACAG



USACAG outlasted the other construction agencies, but as an organizational anomaly. It had always been unusual because a civilian served as director. Several factors conjoined to bring on its demise: Camblor's leave of absence during most of 1962 and 1963, USAREUR's study of engineer resources, a Department of Defense study urging consolidation of construction activities, the declining volume of work in France, and the elimination of all other construction agencies. Camblor's deputy, Col. Paavo Carlson, became acting director of USACAG; by June 1963 Carlson was signing documents as director.[56] USAREUR appointed another military officer, Col. Ed Streck, to succeed Carlson. Camblor completed the program at the Industrial College and continued his studies for several months in Washington, earning a master's degree in business administration. By the time he was ready to return to Germany, USAREUR had decided to reorganize its engineer activities.[57]

Camblor returned to Europe in September 1963 to serve in the USAREUR engineer's office in Heidelberg, not to his former position in Frankfurt. Camblor accepted a new position as Morris' special assistant because he judged that serving at a higher headquarters might enhance

Figure 2: Annual Construction Placement of the U.S. Army Construction Agency, Germany, and the Engineer Element, 1957–1966



his opportunity for promotion; but many of his civilian colleagues viewed Morris' offer as a device to remove him to install a military officer as USACAG commander.[58] In February 1964 USAREUR consolidated USACAG with the U.S. Army Field Engineer Office, France, to form a new entity, the Engineer Element.[59] (*Figure 2*)

The Engineer Element inherited USACAG's offices in Frankfurt and its staff. A subordinate command of the USAREUR engineer, it supervised dollar-funded military construction in Germany, France, and the Benelux countries; monitored NATO construction and construction programs financed from other sources; and provided professional and technical engineering services to other USAREUR elements. For USAREUR, the Engineer Element managed Operations and Maintenance, Army, design-engineering projects costing between $25,000 and $200,000. USAREUR assigned projects costing under $25,000 or involving no design to its post engineers. In October 1965 USAREUR transferred management of real estate to the Engineer Element. Since the end of World War II, major subordinate commanders at the area level had handled real estate operations. Late in 1964 USAREUR had centralized these responsibilities under the Army Area Command, with headquarters in Munich; a year later the function and a staff of about eighty people passed to the Engineer Element.[60]

The change from a civilian director of USACAG to an Army colonel commanding the Engineer Element made little difference in the day-to-day work on such activities as Nike and Mace missile installations, troposcatter, NATO infrastructure, Alternate Construction, and other programs and projects. Many long-term employees hardly remembered the Engineer Element as a distinct organization. When interviewed twenty-five years later, only one person other than Camblor could recall by name the colonels who commanded it from 1964 to 1966.

During an eight-year existence, USACAG achieved a distinguished history. It had overseen the installation of missile sites and construction of storage facilities to support atomic weaponry as NATO expanded its military capabilities in the 1950s. It had responded to the challenge of the Berlin Wall by preparing Berlin to receive supplies by air if the Soviet Union tried to impose a second blockade. It had the unique distinction among military construction agencies of being commanded by a civilian. USACAG ceded place in 1964, but its successor, the Engineer Element, gave way in 1966 to the Engineer Command, a unique organization that brought together all engineer resources in the European Theater for the first time.

6

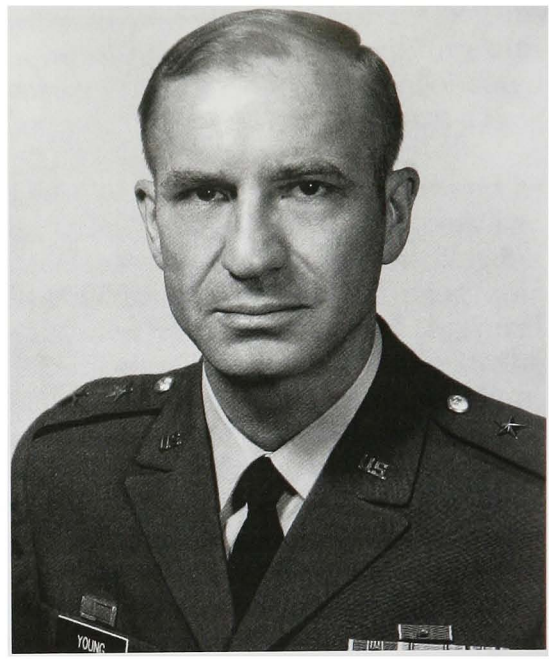
ENGINEER COMMAND 1966–1974

The Engineer Command owed its origin to the determination of the commander in chief of the United States Army, Europe (USAREUR), General Andrew P. O'Meara. When O'Meara assumed command in March 1965, he brought a wealth of experience in postwar Germany to his new assignment. From 1948 to 1951 he had served as chief of logistics planning at the European Command's headquarters in Heidelberg; and in 1957, as commander of the 4th Armored Division, he had moved the unit from Fort Hood, Texas, to Germany, where he remained for a two-year tour of duty. O'Meara had developed strong opinions about what the Army engineers ought to be doing for USAREUR.

Soon after arriving in Heidelberg in 1965, O'Meara inquired about a project he had launched while commanding the 4th Armored Division: moving the rear elements of the division into the Nuremberg area. O'Meara learned that his plan had been approved in 1960, but the relocation had become stalled in negotiations for the Alternate Construction Program. Incensed by the lack of progress, O'Meara asked the USAREUR engineer, Brig. Gen. Howard A. Morris, for an explanation. Morris said that the district commanders were responsible for the delays; the district commanders put the blame elsewhere. O'Meara's review of other engineer activities fueled his anger. Garrisons targeted for renovation during his tour in the logistics division fifteen years earlier had not been finished. USAREUR's construction battalions had poor discipline and inadequate supervision. And O'Meara did not think that the labor service units of skilled German and Baltic craftsmen were being used appropriately. O'Meara dubbed the situation "a stinking engineering mess" and demanded accountability.[1]

While O'Meara questioned the deployment of engineer resources within USAREUR, his control of these assets was being challenged in Washington. Early in 1965 the Department of the Army asked the Office of the Chief of Engineers (OCE) to study the organization of military

construction in Europe, the only Army command where contract construction was not managed by the OCE. The OCE study concluded that contract construction currently assigned to USAREUR ought to be assumed by the Corps of Engineers and managed by the Mediterranean Division through a district office in Frankfurt. When these recommendations were announced in May 1965, O'Meara immediately dissented.[2]



General Young in 1970

O'Meara insisted that control of all engineer resources remain directly under his authority as USAREUR commander. The Department of the Army asked the Army Audit Agency (AAA) to review the OCE study and to present independent recommendations. The audit, completed in October 1965, concurred with the OCE analysis. Among the staff of the Engineer Element, rumors began to circulate of "a power struggle for us between USAREUR and the chief's office."[3]

Despite the consensus between the OCE and the AAA, O'Meara resisted. He wanted to consolidate all engineer personnel and resources directly under the USAREUR commander. Months before O'Meara assumed command, USAREUR had consolidated its logistical support facilities in Germany, creating a single logistical command to provide area support to all Army forces in Germany except those in Berlin and Bremerhaven. The new Army Area Command, headed by a West Point classmate of O'Meara's, Maj. Gen. Tom R. Stoughton, managed all stocks and logistical activities as well as installation support throughout Germany. Stoughton strongly opposed O'Meara's proposal to create a competing engineer command, as did most of O'Meara's general staff, including the USAREUR engineer, General Morris. O'Meara realized that he needed to go outside his own staff to get another assessment of his idea. A personal friend and engineer officer, Earl Peacock, recommended Col. Robert P. "Rip" Young, commander of the 7th Engineer Brigade. In July 1966 O'Meara wrote Young—whom he had never met—instructing him to study the feasibility of organizing all the engineer elements in Europe into an engineer command.[4]

Colonel Young had arrived in Frankfurt in September 1964 for his first tour in Europe. A 1942 graduate of the U.S. Military Academy, Young had served with an airborne engineer battalion in World War II, commanded an engineer battalion in Korea, and served as district engineer in the

Seattle District of the Corps of Engineers. Assigned as V Corps engineer in 1964, Young was moved within weeks to deputy chief of staff of V Corps. In July 1966 Young had begun an assignment as commander of the 7th Engineer Brigade. O'Meara's letter arrived almost immediately.[5]

Concerned about the task given to him directly by O'Meara, Young discussed the situation with Brig. Gen. Craig Cannon, Morris' successor as USAREUR engineer. He quickly learned that O'Meara's idea was unpopular with the staff in Heidelberg and opposed by the area commanders. Nevertheless, Young began with the assumption that a feasible plan could be devised.

At the first briefing to discuss the feasibility of reorganization, the USAREUR staff was hostile, but O'Meara told Young to formulate an implementation plan. General Stoughton objected that the engineers could not supervise services such as snow clearing, packing and crating furniture, or other tasks that his Army Area Command provided to support U.S. military installations throughout Germany. General O'Meara agreed to leave the engineer positions assigned for facilities maintenance with the Army Area Command. When Young presented the implementation plan, O'Meara announced that the new command would be implemented as outlined and that Colonel Young would head it.[6]

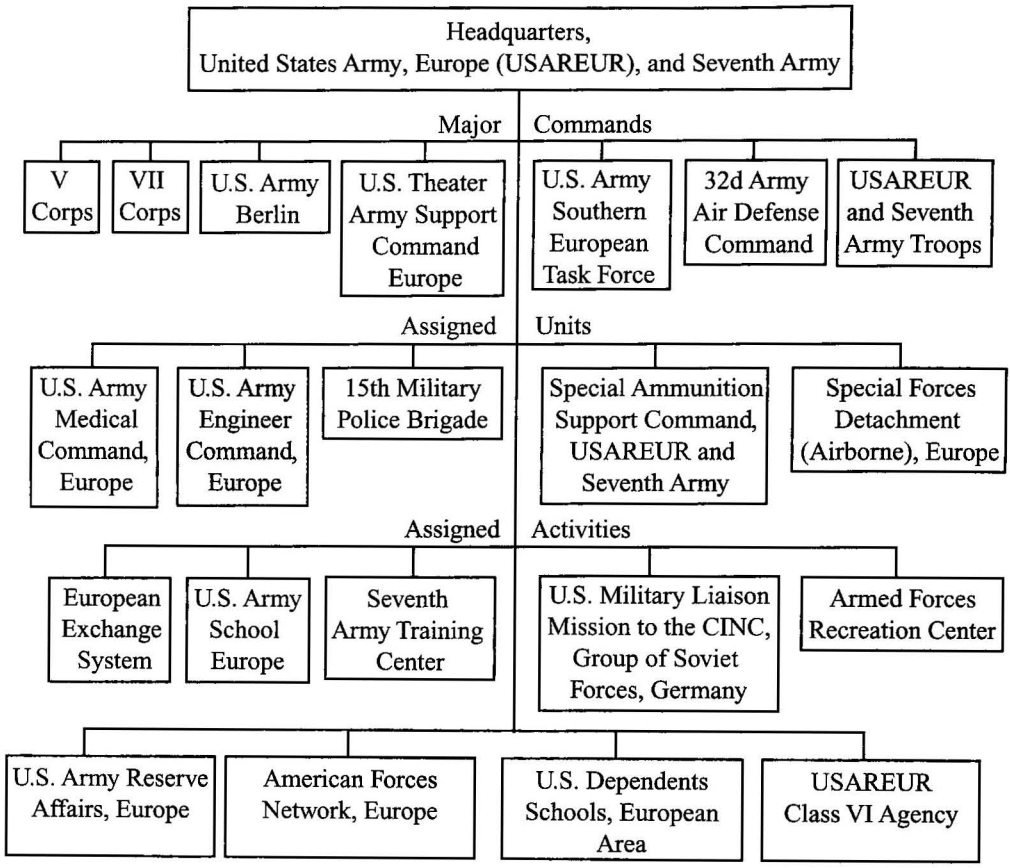
In a brief ceremony on 1 November 1966, USAREUR activated the Engineer Command (ENGCOM). In the first phase of the implementation, ENGCOM merged the Engineer Element (contract construction and real estate) and the 7th Engineer Brigade (engineer troops and 6970th Labor Service/Civilian Labor Group [LS/CLG]). Young set up offices in the building in Frankfurt that had been used by the Engineer Element and its predecessor, the United States Army Construction Agency, Germany (USACAG). He moved headquarters of the 7th Engineer Brigade from Karlsruhe to Frankfurt. The second phase of ENGCOM's consolidation entailed the transfer of the repairs and utilities mission from the Army Area Command to ENGCOM.

Beginning in May 1967, for the first and only time, the Army's major engineer resources—contract construction, troop construction, and facilities engineering—operated under one headquarters as a subordinate command of USAREUR rather than as an element of the general staff office in charge of logistics (G–4). The reorganization preserved a unique aspect of the authority of the commander in chief, USAREUR; only in Europe did the theater commander control engineer resources directly. (*See Chart 8.*) In all other major Army commands, the OCE in Washington managed contract construction for the Army and Air Force. O'Meara had achieved what he wanted.[7]

Structure and Organization

In the face of overt opposition in the Heidelberg headquarters, Young's task of pulling the various components together into one organization was not easy: "It was," he recalled, "a tug of war all the way."[8] The contract construction mission that ENGCOM took over from

Chart 8: Organization of Headquarters, U.S. Army, Europe, and 7th Army, 1969

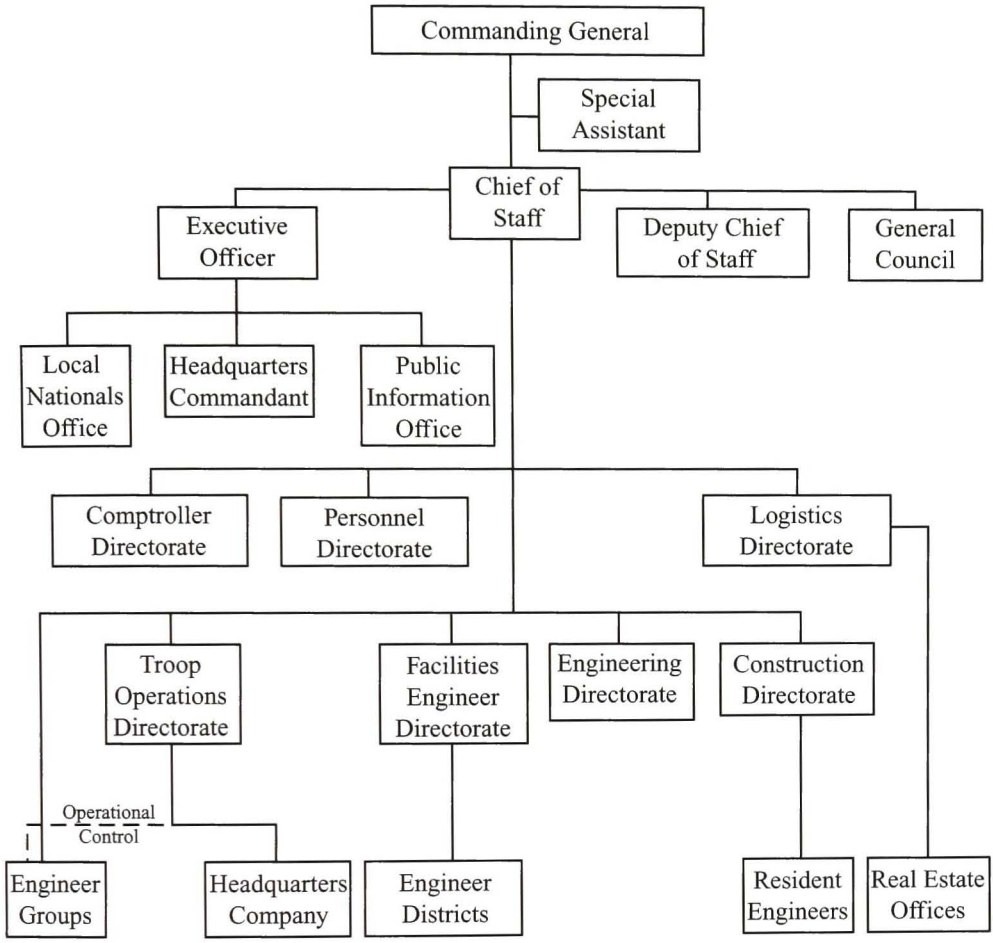


USACAG and the Engineer Element encompassed the execution of dollar-funded construction for U.S. military forces in Europe; the supervision and inspection of North Atlantic Treaty Organization (NATO) construction undertaken for U.S. forces and of alternate construction provided by the Federal Republic; and the management of related real estate functions.

ENGCOM also inherited from the 7th Engineer Brigade three missions associated with engineer troops: execution of construction for the Army and the Air Force using troop labor, maintenance of combat readiness among the engineer troops, and readiness to execute contingency and war plans. Throughout USAREUR (excluding Bremerhaven and Berlin), ENGCOM's mission to support installations—facilities engineering—covered the complex and essential tasks of maintenance, repairs, and provision of utilities. All elements of ENGCOM shared responsibility for furnishing professional and technical engineering services to the commander in chief, USAREUR.[9]

Young organized ENGCOM headquarters in Frankfurt with an Executive Command Section and seven directorates: Engineering,

Chart 9: Organization of U.S. Army Engineer Command, Europe, 1970



Construction, Operations, Facilities, Personnel, Logistics, and Comptroller. (*Chart 9*) The Operations Directorate coordinated military activities other than construction, and the Facilities Directorate managed the repair and utilities mission. The Logistics Directorate supported both troop units and the repair and utilities needs of the engineers serving military facilities (district engineers) and supervised the operations of the real estate offices.[10] ENGCOM maintained five offices in West Germany to supervise the acquisition, disposal, and management of real estate for USAREUR.[11]

Resident engineers, operating out of ten (early 1967) and then nine (summer 1968) localities, executed the contract construction function. Eleven district engineers carried out the repair and utilities mission (*see Map 11*), supervising thirty-nine community engineers (also called post engineers, although posts had been replaced by military communities in USAREUR) and forty-five subcommunity engineers.[12]

Map 11

Military, Civilian, and German Personnel

During 1967 and 1968 some 700 to 800 people worked at ENGCOM headquarters, in district and resident engineer offices, and in real estate functions. With nearly 7,000 soldiers and 14,000 civilians working on-site

at the installations, the Engineer Command had an overall force of about 21,000.[13]

Personnel for the command consisted of military officers, Department of the Army civilians (DACs), and German nationals. In general, Army engineer officers headed major divisions in headquarters and in the field offices. Young named Col. A. Darby Williams, Jr., commander of the Engineer Element since the autumn of 1964, as chief of contract construction and deputy commander.[14] A second colonel served as deputy commander and chief of troop operations with responsibility for the 24th Engineer Group (Construction) and the 6970th LS/CLG. In August 1967 a third colonel assumed office as deputy commander and chief of facilities engineering. ENGCOM consistently had problems finding qualified officers to serve as engineers at the community level. The job called for officers with the experience commensurate with the rank of an engineer major; but competing demands, especially the war in Southeast Asia, left only lieutenants available for most assignments.[15]

Civilians who had served with USACAG and the Engineer Element provided both leadership and continuity in ENGCOM headquarters. John Tambornino became chief of engineering, and H. Jace Greene remained as chief of construction. William E. Camblor, former director of USACAG, returned to Frankfurt to serve as special assistant to the commander. Leonard L. Phillips, legal counsel in USACAG since 1960, became general counsel. Saul Fraint served as chief of technical engineering, and John Haugen continued as chief of planning. Adolph Faust, who had come to USACAG after working for the Army engineers in Austria and with USAREUR's Northern Area Office, was named chief of civil engineering; he later worked as chief of structural engineering. Louis Brettschneider remained as chief of mechanical engineering (a section under USACAG but now a branch) and, when Fraint retired in June 1973, succeeded him as chief of technical engineering.[16] When offices in France closed in 1966 and 1967, Jacques Bouchereau, a naturalized American citizen from Haiti who had worked with the Joint Construction Agency and its successors in France, joined ENGCOM's Engineering Division, as did John Shadday, a former Army engineer officer.[17]

Other experienced civilians came into the organization when ENGCOM assumed responsibility for facilities engineering. Randolph S. Washington, a budget analyst, transferred from the Army Area Command in 1967; he later served as deputy and supervisor of the Budget Office. Edward Zawisza, who had worked for the Joint Construction Agency, for the facilities engineer in Stuttgart, and with the Army Area Command, joined ENGCOM as deputy chief of facilities engineering. Robert Rodehaver first became chief of operation and maintenance programming in the new Facilities Directorate and then in 1972 was promoted to chief of buildings and grounds.[18]

Despite the continuity in leadership that these men provided, American civilians made up less than 3 percent of ENGCOM's workforce and the command remained short of qualified engineers in mid-level

The 6970th Labor Service/Civilian Labor Group built this school in Heidelberg in 1967.

positions.[19] Germans and third-country nationals held more than 90 percent of the civilian positions as estimators, typists, translators, engineers, legal aides, and contract administrators. During the late 1960s and early 1970s, ENGCOM had difficulty attracting Germans with professional qualifications: Unemployment was low in the Federal Republic, and the salaries offered by the Army were about one-third less than comparable jobs in the West German economy. Although retaining qualified Germans was even harder than recruiting them, some, including Hasso Damm, who had joined USACAG in 1956, continued under ENGCOM.[20]

Engineer Troops

The Engineer Command included the 24th and 39th Engineer Groups (Construction) and the 6970th LS/CLG.[21] Engineer troops in the 24th and 39th were assigned to heavy construction, including earthmoving, rehabilitation, and road building. The command also used troops for crash programs such as constructing forty school classrooms, work that involved preparing foundations, laying concrete, setting up Quonset huts, and installing wiring.[22]

ENGCOM gained a unique resource in the 6970th LS/CLG. Each of its six companies maintained a roster of about 150 men. Three companies—civilian labor groups—were composed of Germans; the other three—labor service—included displaced persons from East European nations,

especially the Baltic states that had been absorbed into the Soviet Union. A headquarters company of about 200 men managed this organization under the 7th Engineer Brigade. Members of the labor service units wore uniforms and were commanded by officers from their own ranks who were experienced in planning and executing construction projects.[23]

The U.S. Army of occupation created labor service units in early 1947 to augment its engineer units, and over the next twenty years the Army developed contractual relations with the groups. The labor service personnel in the 6970th LS/CLG served an average of ten years and maintained a high level of proficiency in crafts crucial to construction—carpentry, masonry, electrical wiring, heating, plumbing, and welding.

The standard workweek for the labor service personnel was forty-three hours on construction plus additional hours in training and improving skills. In 1950 the labor service men adopted the elephant as their emblem to symbolize strength and endurance; their nickname became *Dickhäuter*, "thick-skinned."[24] For their tremendous morale, pride, dedication, and discipline, as well as consummate skill, they won the praise of the Americans who worked with them.[25]

The ENGCOM structure permitted the labor service and civilian labor groups to be employed quickly and effectively to support contract construction, as they had previously supported troop construction. Furthermore, troop units and the labor service units could be assigned to a project together, with troops doing the initial site preparation and roughing in a structure and the labor service troops finishing the project.[26]

Facilities Engineers

Before the creation of the Engineer Command, district engineers, working under the eleven commanders of military districts in West Germany, provided support for the military installations used by the U.S. Army and Air Force. The district commanders in turn had reported to the Army Area Command in Munich, whose deputy chief of staff for installations had supervised all activities connected with facilities engineering. After 1966–1967, district engineers reported to the director of facilities at ENGCOM headquarters and came under the immediate authority of the ENGCOM commander, who endorsed their efficiency reports.[27] The engineers liked the centralization of resources in the Engineer Command because it allowed them to establish uniform criteria for ranking projects across USAREUR. Moreover, the weight of ENGCOM's authority made the resources needed to accomplish an approved task more readily available to the district engineer.

The Engineer Command set rationalization and standardization as its goals. At its recommendation, USAREUR approved a plan for establishing priorities among competing demands for work on repair and utilities projects. Facilities and activities were divided into four categories—operational, tactical, recreational, and administrative—and assigned priority to the

first two categories. It then set six levels of urgency within each category, which helped district engineers prepare annual work plans with some uniform benchmarks. ENGCOM also set standards for materials used in repair and replacement, whether the work was done by contract, in-house personnel, or engineer troops.[28]

ENGCOM's efforts to centralize decision making and to standardize criteria were similar to the attempt launched in the late 1940s by EUCOM's chief engineer, Brig. Gen. Don G. Shingler, to centralize planning for maintenance and repair throughout the his command. Like Shingler, ENGCOM organized mobile technical teams that included electrical, mechanical, and civil engineers. Teams in both periods traveled to districts to offer assistance at the local level.[29]

The structure of the Engineer Command allowed its leaders to manage the limited resources available to USAREUR during the 1960s and early 1970s. The command combined engineer troops, contract authority, and facilities engineers, thus bringing to military communities in Europe a range of assets that facilitated effective organization, comprehensive planning, and standardization. The combination made possible more effective delivery of engineer services with fewer people and at lower cost than in the past.[30]

The Changing Environment in Europe

As Colonel Young worked to establish the Engineer Command, USAREUR wrestled with two major developments that conditioned its operations. The first was dramatic and relatively short-lived: France's decision to leave NATO. The second was the growing American involvement in Southeast Asia and pressures from within the United States to reduce the financial drain of a large troop commitment in Europe. This development proved to be more consequential and had longer-lasting effects.

FRELOC Mission

In March 1966 French President Charles de Gaulle withdrew all French military forces from NATO and stipulated that any foreign forces remaining on French soil on 1 April 1967 would come under French military authority and command. Faced with subordination to French military authority, the United States and other NATO members decided to relocate their military units from France. The U.S. removal bore the name Operation FRELOC, for Fast RELOCation.

A major element in the relocation was how to allocate management of USAREUR's stocks and logistical activities, all of which were being concentrated in West Germany. The Communication Zone (COMZ) in France had handled all logistical and area support for U.S. forces; USAREUR concluded that it should absorb the Army Area Command, which handled similar functions in Germany from its headquarters in Munich. On 1 July 1967, COMZ headquarters moved from Orleans, France, to Worms, West

Army engineers built depots like this one in Hanau to store equipment arriving in Germany as U.S. troops moved out of France.

Germany, and took over the responsibilities of the Army Area Command. Exactly one year later, with no change of mission, COMZ was redesignated the Theater Army Support Command (TASCOM).[31]

The redeployment of American personnel and resources from France in FRELOC involved moving about 30,000 troops and 40,000 civilians from nearly 200 military installations. Both the Army and the Air Force required new or expanded facilities to accommodate the units and the equipment that would be transferred, principally to Belgium and West Germany.[32] In preparation for constructing new facilities, ENGCOM dispatched staff members to France. The deputy chief of construction, Jacques Bouchereau, traveled with cost estimator Hasso Damm to see the buildings that would be vacated and to estimate the size and probable cost of replacement facilities.[33]

One especially tedious project that fell to ENGCOM involved taking inventory, segregating, packaging, and storing pieces of prefabricated buildings that had been dismantled and removed from locations in France. Command leaders protested that the costs involved would exceed the value of the materials salvaged, but the order remained in effect. The first assessment undertaken addressed 302 prefabricated ammunition storage huts shipped to Karlsruhe. As ENGCOM personnel predicted, the cost of the work was twice the value of the materials saved. Similar work indicated that parts from several types of buildings had been mixed together when they were disassembled and shipped.[34]

Initially, USAREUR assigned ENGCOM sixteen construction projects funded at $18.6 million under the program for Military Construction, Army. This included $5 million to provide 873,000 square feet of storage and other support facilities in Germany. To accommodate the supplies and ammunition stored along the line of communications in France, the command expanded depot facilities, including controlled-humidity storage warehouses in Germersheim, Nahbollenbach, and Pirmasens. Design and construction also proceeded on new command facilities in Stuttgart to accommodate the headquarters staff of the United States European Command (USEUCOM) and in Worms for COMZ.

The relocation of NATO's Supreme Headquarters Allied Powers, Europe (SHAPE), to Brussels generated a number of construction projects, including a house for the supreme allied commander, General Lyman L. Lemnitzer; a headquarters building; and a school complex for the children of U.S. military and civilian employees. The Belgians, eager to accommodate the incoming military staffs and families, worked to make it possible to open the school for the 1967–1968 academic year.

ENGCOM assigned Bouchereau, deputy chief of construction and responsible for estimating, as project engineer for the school in Belgium because of his experience in both engineering and construction and his fluency in French. To speed decisions, the Department of Defense sent the assistant secretary for construction, Evan Harrington, to Frankfurt, where Fraint and his staff rushed to draft design specifications and preliminary floor plans. Harrington approved the basic design on the spot, and Bouchereau delivered the plans to the Belgian government, which contracted with an architect-engineer firm to adapt the design to the site. With the help of a Belgian realtor, Bouchereau located an appropriate site—an apple orchard outside the small community of Sterrebeek, five miles from the center of Brussels—and then negotiated for and bought the property on behalf of the U.S. government.

Clearing began on the site before the Belgian government realized that Bouchereau had acquired title to the land in fee simple; that is, the property owner had surrendered absolute possession of the fourteen acres. Individuals do not exercise sovereignty over their property, but a country does; thus sovereignty over this property passed with the title to the United States. It was an oversight the Belgians would not repeat. In the government-to-government agreements negotiated in 1968, the Belgian government insisted on a clause specifying that all land used by the United States for its military forces remain the property of Belgium. As late as 1992 the acreage on which the American school sat in Sterrebeek remained the only piece of land in Europe that belonged in full title as sovereign territory to the United States.

Bouchereau headed the ENGCOM resident office set up in Brussels to oversee projects in Belgium, including the school complex and a dental clinic to be built at the same site. The school complex had to be made completely self-sufficient, with a heating plant, transformer station, water chlorinating station, and sewage plant. The school complex consisted of

a two-story elementary school; a high school building; a gymnasium; a sports field; and a one-story structure combining administrative offices, cafeteria, library, kitchen, and shops. The final design for the school was completed in two months. A Dutch company, Strabed, began construction in July 1967 and used 55,000 square feet of prefabricated reinforced concrete panels to hold construction costs to $1.6 million. The school opened in October.[35]

New construction for the relocation also involved creating a headquarters facility for the U.S. European Command, which since 1954 had been located in France with SHAPE. When SHAPE moved to Belgium, USEUCOM moved to Stuttgart and the Seventh Army headquarters moved to Heidelberg to share space with USAREUR. ENGCOM also managed the construction of the command center for USEUCOM at Patch Barracks in Stuttgart.

The command and control center—informally referred to as C^2 (C-squared)—was a three-story building with wings to the east and to the west constructed with a welded steel frame and reinforced concrete. For reasons of physical and electronic security, the main building, 54,370 square feet of floor space, had only one window. The electronic equipment needed for intelligence work and to exercise command and control was housed on the first floor and shielded to prevent hostile monitoring of electromagnetic signals. The main building also featured a two-story situation room with a command balcony and an eight-screen projection wall furnished with the most sophisticated audiovisual equipment available. The west wing contained the computers that processed intelligence information. The east wing contained the support systems. Pneumatic tubes connected all the stations within the building and other sites in the headquarters complex. To accommodate heavy demand for electronic support, the facility was equipped with two backup diesel generators.[36]

Design for the C^2 project began in November 1966; ground was broken on 10 May 1967; and by 13 October ENGCOM and USEUCOM celebrated the "roofing-in" of the building with a *Richtfest*, the old German construction ceremony. The C^2 *Richtfest* honored the construction crews, which included men from seven nations, and the engineers, all of whom had worked sixty-hour weeks to enclose the structure before winter. The workers installed the heating plant ahead of schedule, so work continued uninterrupted throughout the winter. John Shadday oversaw the project for ENGCOM. USEUCOM's liaison officer for the project was an infantry colonel who insisted that the military users make prompt decisions and drove them by threatening to make the decisions for them if they delayed. The center became operational in July 1968, eliciting commendations for ENGCOM for rapid completion of the project.[37]

On 31 March 1967, eight hours before de Gaulle's deadline, U.S. forces completed the evacuation of personnel and materiel from France. With the approval of the French, a small residual force remained behind to complete the liquidation of U.S. assets and to support U.S. dependents authorized to remain until the end of the school year or until completion

of facilities in Belgium. By the end of 1967 the U.S. Army had closed all installations in France except facilities associated with the oil pipeline. Under agreements negotiated in April 1967, the pipeline remained available for both American and French use. Civilian contractors operated the facility, and the French government provided security. The United States retained the right to inspect the pipeline, accompanied by French officials, four times a year.[38]

The work that resulted from the movement of U.S. forces was not over once the troops were relocated. Nor was all of it as satisfying as the American school in Belgium or the command and control center for USEUCOM in Stuttgart. Still, Colonel Young was proud of his command's efforts. "We really did a great job.... Because we had put everybody, all the engineers, under one commander ... we could move fast and effectively in using resources."[39]

Rethinking the Commitment to Europe

While ENGCOM struggled to integrate the various engineer resources into an effective command and responded to the challenges of FRELOC, political pressures in the United States mounted that would influence Army engineer activities for many years. Since the beginning of the 1960s the United States carried a balance-of-payments deficit with the Federal Republic of Germany, prompting a growing American political sentiment that the Germans ought to bear a greater share of the financial burden for their own defense. Senator Mike Mansfield (D-Montana) advanced this argument in August 1966 when he first introduced his Sense of the Senate Resolution calling for a reduction in U.S. forces in Germany. For the next several years the call to remove U.S. troops from Germany sounded annually in the Senate, intensified by the increasing burden of the conflict in Vietnam. These pressures led the Department of Defense to withdraw about 35,000 U.S. troops and 28,000 dependents from Germany between late 1967 and the end of 1968. The West German government, although nervous about the troop withdrawals, acquiesced.[40]

Concerned that the withdrawals not send a message of weakness or lack of resolve to either the Europeans or the Soviets, the Department of Defense devised a strategy called dual basing. Under this arrangement troops stationed in the United States would be airlifted each year for training in West Germany with NATO army groups. The REFORGER (REturn of FORces to GERmany) exercises were designed both to enhance the military capabilities of the U.S. and allied forces and to reassure the NATO participants of the firm U.S. commitment to the alliance.[41]

While the withdrawals took place and U.S. defense planners initiated REFORGER, the West German government accepted an arrangement to help offset the costs of the U.S. military presence in Germany by buying $500 million in medium-term treasury certificates. The arrangements to fund modernization of facilities used by the U.S. military represented one

additional effort in a long line of offset agreements. Undertaken by the West German government, these arrangements became a recurring part of USAREUR's operations and provided substantial Deutschmark (DM) funds for military construction during the 1970s. (*See below in this chapter, as well as Chapter 11.*)

Workload and Funding

ENGCOM applied the combined resources of troop construction, contract construction, and facilities engineering to manage work under the NATO Common Infrastructure Program, a full array of military construction for the Army on projects ranging from airfields to schools to washracks, and work under the Alternate Construction Program.

In summer 1968 ENGCOM had more than 400 active projects with an estimated value of $198 million under contract in various stages of design and construction. Forty contracts were for Air Force projects and seven for NATO infrastructure projects; twenty contracts represented facilities under the Alternate Construction Program with funds provided by the Federal Republic of Germany.[42] Army construction occupied the largest percentage of ENGCOM's efforts, a total of ninety-two projects with an estimated value of over $20 million.[43] (*See Table 3.*)

Troop construction under ENGCOM accounted for 196 projects that had a value of only $5.7 million. This did not include the operation and maintenance work performed by troops in support of the district and community (post) engineers. Although the dollar value of this work was low, the involvement of troops in construction gave the command flexibility in carrying out its mission.[44]

Dozens of ENGCOM construction projects qualified for funding under the NATO Common Infrastructure Program. These projects included some of the facilities built in Belgium to accommodate the move of NATO headquarters from France; many of the Hawk missile sites built in the 1960s and 1970s; aircraft shelters; and facilities for U.S. forces assigned to NATO in Germany, Italy, Greece, and Turkey.[45]

During the 1950s the United States had willingly advanced the money for the construction of military facilities rather than waiting for NATO budgetary approval. In the 1960s the practice of prefinancing declined, because of U.S. concern about gold outflow and the financial demands of the Vietnam War. The U.S. government wanted NATO to finance infrastructure projects from the start, but the NATO funding process involved long and very complicated negotiations to get the unanimous approval of the NATO member states required for each project.

In 1969 ENGCOM established a branch in the Office of the Comptroller to recover funds from NATO for projects that had been prefinanced with U.S. dollars. Headed by an American civilian, the NATO Recoupment Branch initially included three German civilians, although this number grew as the volume of work increased. The work of this group was enormously complicated by a fire in November 1968 when papers were

Table 3

Military Construction for the Army
June 1968

Project Type	Number
Operational facilities	10
Commercial facilities	31
Maintenance	1
Storage	15
Airfields (Army)	9
Administrative and community	26
Total	92

Source: "Briefing for LTG Cassidy," 17 June 1968.

charred, damaged by water, or lost entirely. The recoupment staff had to develop regulations, policies, and procedures to govern its work. They also had to pay painstaking attention to detail and complete numerous NATO forms. It took years before the staff's efforts led to the recovery of significant amounts of money.[46]

ENGCOM also discharged the task of developing and negotiating all the alternate construction agreements for USAREUR. Once Germany and the United States signed an agreement, ENGCOM provided the German construction agency, the *Bautechnische Arbeitsgruppe* (Technical Construction Working Group), with a scope of work on which to base design and construction. Lower-echelon offices such as the *Landesabteilung* (State Construction Division) or the *Finanzbauamt* (Office of Finance for Construction) eventually produced preliminary designs for review by ENGCOM's Engineering Directorate, a construction contract, and a finished project. The process involved two parallel operations: a contract between ENGCOM and the *Bautechnische Arbeitsgruppe* and then contracts between the *Finanzbauamt* and an architect-engineer firm (for design) and a contractor (for construction). The process demanded significant staff time.[47]

All of ENGCOM's programs involved real estate. To monitor this dimension of the projects, the command maintained a Real Estate Division with regional offices covering Germany, France, Italy (excluding Naples and Sicily), and the Benelux countries. After the relocation of U.S. forces from France, responsibilities there consisted only of leases with private French contractors to manage and operate the petroleum pipeline that the United States had built across France.[48]

Securing real estate became an ever more difficult task. West Germany's booming economy, the presence of armed forces from several nations, and a growing environmental sensitivity all created pressures on

land use. During the early 1970s continued talk in the U.S. Senate about reducing forces in Europe, as well as meetings of the major powers to discuss detente in international politics, also made it difficult for many Germans to understand why the Americans needed more land.[49] By 1973 the Real Estate Division was hampered by having German employees in positions where a familiarity with U.S. policies, procedures, and concepts constituted major criteria for the work. ENGCOM lacked the funds to discharge its real estate mission. Indeed, it faced a budget gap for fiscal year 1974 of $115,000 just to cover the salaries of existing staff.[50]

Projects

The pressures created by Operation FRELOC strained the Engineer Command's capabilities; but the elements drawn into the new command worked effectively together, and Young won the confidence of the employees. General O'Meara, who left USAREUR in March 1967, pressed to have Young promoted to brigadier general, intending that he remain as ENGCOM commander.[51] Young's name appeared on the promotion list, but he did not remain in Europe. The chief of engineers, Lt. Gen. Frederick J. Clarke, selected him to organize the new Huntsville Division of the Corps of Engineers, which was to design and construct the Sentinel/Safeguard ballistic missile systems. Young was promoted to brigadier general in September 1967 and left Europe the next month.[52]

Young's successor as commander, Kenneth W. Kennedy, was also on the August 1967 promotion list, but he arrived in Germany on October 17 as a colonel. Kennedy had served two tours in repairs and utilities positions; ENGCOM was his first assignment in Central Europe. Kennedy's promotion to brigadier general came in March 1968.[53]

General Kennedy (right) *with Chief of Engineers Lt. Gen. William F. Cassidy in June 1968*

The Boiler Conversion Program

Upon assuming command, Colonel Kennedy immediately received directions to give high priority to a specific problem. On his first day in Germany, he received a message from General James H. Polk, O'Meara's successor as commander in chief of USAREUR, instructing him

to make a special effort to improve troop facilities. Ten days later the USAREUR engineer, Brig. Gen. Roy S. Kelley, wrote Kennedy about the heating systems in the barracks. An attachment to Kelley's letter bore the typed message, "It can be expected that the commander in chief will verify completion status during field trips throughout the command." To that Kelley added the handwritten note, "*Strong* CINC [commander in chief] interest!"[54] The need to modernize heating equipment in American facilities in Europe was the first of several major maintenance problems that Kennedy faced.

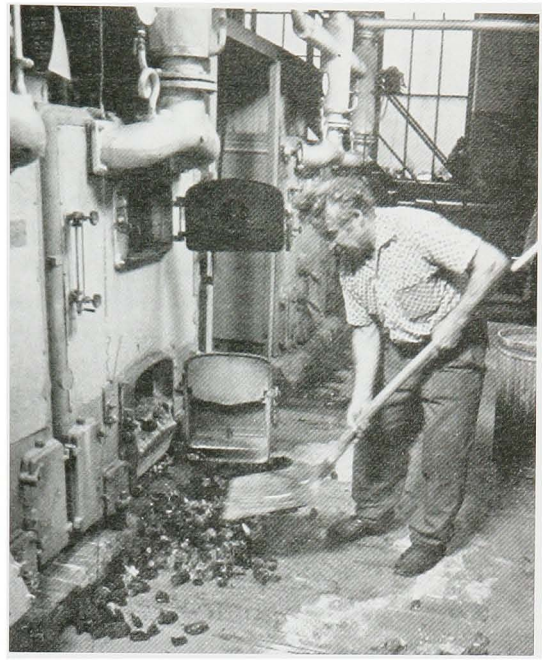
Most of the buildings used by U.S. troops since the occupation had been built for the German Army before World War II; many of them dated back to the turn of the century. Heating equipment in the facilities dated from the 1930s. By the 1960s the cast-iron boiler design typical of these systems was antiquated, and repairs were difficult and expensive. Although the boilers were designed to burn Ruhr coal, by the early 1960s they were all fired with anthracite coal imported from the United States, which had different mineral properties. Political pressures from the American coal lobby and economic pressures over the outflow of gold reserves from the U.S. Treasury combined to persuade President John F. Kennedy to order the U.S. Army to use American coal in Europe. Kennedy's presidential order added about $1 million a year to USAREUR's maintenance budget and, because the anthracite coal—owing to its properties—burned poorly in the German boilers, further decreased the efficiency of the existing heating systems. Because USAREUR consistently received inadequate money for routine maintenance, the equipment continued to deteriorate. In 1964 the Engineer Element had proposed converting to oil-burning furnaces throughout Germany. The Department of the Army rejected the proposal but suggested that USAREUR submit requests to convert individual heating plants.[55]

In addition to the boilers, the military in Europe also used hundreds of single-room coal-fired space heaters to warm troop billets, latrines, mess halls, and work areas. In September 1964 USAREUR authorized a "repair by replacement" plan to systematically eliminate all space heaters over a five-year period. In March 1967 General O'Meara declared that he wanted the job completed before the next winter. In addition to being inefficient, the space heaters were a major cause of fires in European buildings.[56]

Kenneth Kennedy inherited a replacement plan for space heaters but had no comparable plan for replacing the central heating boilers. In fact, ENGCOM did not even have an accurate count of how many boilers the military operated. Kennedy therefore ordered an inventory of almost 800 U.S. installations and learned that the military operated some 10,000 low-pressure boilers of various capacities. The equipment included forty-four different German makes and models, 90 percent of them outmoded.[57] With this new information, ENGCOM launched a plan early in 1968 to modernize all heating equipment used in USAREUR installations. The

command centralized approval of boiler replacement and used salvage stock on hand, including oil-fired boilers recovered from France during FRELOC to replace worn-out coal-burning boilers in Germany.[58]

Coal-fired boilers had the additional disadvantage of being labor-intensive in a scarce labor market. Because coal-fired boilers needed to be stoked, they required 60 percent more hours of labor than oil-fired boilers. The ENGCOM roster listed 5,000 boiler-firemen, jobs filled primarily by Germans. The older German firemen who had worked since the 1940s were retiring by the late 1960s, and few younger men wanted the backbreaking job. Budgetary pressures persuaded Kennedy to mandate that the number of Germans on his payroll be reduced by 20 percent. To achieve the reduction and still keep the boilers heated, Kennedy persuaded Polk in September 1968 to allow the use of troops to fuel the boiler fires.[59]



Coal-fired boilers, like this one at Warner Barracks in Bamberg, were prevalent in the 1960s and 1970s.

ENGCOM personnel were not surprised when inexperienced troops damaged the antiquated boilers. Once damaged, a coal-burning boiler automatically became eligible for replacement with an oil-burning boiler. Replacing the old German boilers with steel boilers manufactured in the United States increased efficiency and economy in heating, eliminated the need for firemen, helped the American balance of payments, modernized heating facilities, and reduced long-term expenditures for maintenance.[60]

The 6970th LS/CLG played a key role in the entire program to convert heating plants. Kennedy organized U.S. soldiers into teams to work with the labor service units. By April 1970 ENGCOM had thirteen boiler conversion teams in the field, nine made up of enlisted men on loan from USAREUR troop units.[61] The teams made good progress, but cuts in ENGCOM's maintenance budget and a congressionally mandated moratorium on conversion to oil-burning boilers imposed on 12 October 1972 made completion of the program impossible.[62] The program had converted less than half of the 8,755 boilers still in use when it was suspended.[63] In 1972 Kennedy's successor had to procure a small stock of U.S.-manufactured coal-fired boilers to replace those that inevitably broke down. In late 1973, in the face of the oil crisis brought on by the Arab-Israeli War, USAREUR's staff considered converting back to coal.[64]

Stem to Stern Renovations

The high priority that General Polk placed on boiler conversion only highlighted the antiquated state of the facilities out of which the U.S. military operated in Germany. The newest buildings, constructed specifically to accommodate the augmentation of U.S. forces in the early 1950s, had been designed as temporary structures. Built to austerity standards, with a life expectancy from five to fifteen years, they were at the end of their functional usefulness. The balance of the facilities, taken over from the German military, dated from before 1939 and was even more run down.

For years USAREUR had lacked the money and the personnel for routine building maintenance. The repair and utilities budget equaled the programmed requirements in only one year between 1956 and 1964; the engineers could not even maintain the minimum standards prescribed by Army regulations.[65] As resources increasingly flowed to Vietnam, facilities in Europe deteriorated further. While the Pacific Theater spent $523 per square foot for repair and utilities and posts in the continental United States averaged $384 per square foot, USAREUR had only $193 per square foot for Germany.[66]

By the late 1960s troop barracks in Europe were in shockingly deplorable condition. Electrical systems and heating equipment failed regularly. The high mineral content of the water clogged the plumbing systems, frequently leading to broken pipes. Mildew was rampant in the dank shower rooms. Latrines drained through piping embedded in masonry walls. When a leak developed in a latrine pipe, the entire barracks smelled of urine. One officer recalled wryly, "you never had to tell the new recruits where the latrines were.... [Conditions were] worse than a prison."[67]

In March 1966, to address the worst casernes, General O'Meara had earmarked about $5 million of year-end funds for use by the Engineer Element. Because the Army engineers received the funds late in the fiscal year, they had no chance to plan the repairs or to target the most critical situations. As a result, only eleven casernes received piecemeal attention.[68]

General Kennedy resolved to attack the problem more systematically, and he developed a plan to renovate troop barracks and mess halls sequentially. When he discussed the plan with one of the colonels in the USAREUR engineer's office in Heidelberg, the officer agreed that the command needed to repair barracks and casernes "from stem to stern," a characterization that became the label for the program.[69] To launch the Stem to Stern program, ENGCOM asked the district engineers to assemble data on their facilities and prepare plans to renovate latrines, showers, and mess halls. To keep costs down, he instructed them to use their own in-house design capabilities. Kennedy then committed year-end funds from fiscal 1967 to carry out these plans.[70]

The construction engineers from ENGCOM headquarters conducted a complete survey of Sullivan Barracks in Mannheim, and Kennedy ordered labor service troops to gut the building—replumb, rewire, and rebuild it floor by floor.[71] ENGCOM's Engineering Directorate identified Lucas and

Associates in Rome as an architect-engineer firm with experience doing work on repair and utilities for the military. In January 1968 ENGCOM contracted with this firm to survey six other casernes—three from the Seventh Army's V Corps area and three from VII Corps—and prepare designs for their complete renovation. With year-end funds from fiscal year 1968, ENGCOM began renovating four casernes. ENGCOM signed a second contract with Lucas to survey another nine casernes.[72]

By December 1968 the Stem to Stern program was far enough along that, ironically, Kennedy began to get criticism about its slowness. The commanding general of V Corps complained about the slow pace of work in his area, but Kennedy replied that projects in V Corps were "the first to be let for construction." He explained that to take advantage of year-end funds, surveys of conditions, design, and the award of $6 million in contracts had to be completed in only four months. The Army's program to limit the outflow of U.S. gold also required contractors to order such items as floor tiles from the United States, further delaying the work. Despite these problems, Kennedy cited progress on the mess halls at Rivers Barracks in Giessen and at McPheeters Barracks in Bad Hersfeld and on four barracks buildings at Downs Barracks in Fulda.[73] Kennedy hoped that commanders would understand that a systematic program such as Stem to Stern meant that at some point all facilities would be renovated. Of course, the U.S. military operated nearly 800 installations throughout Germany. At the rate of three—or even ten—a year, it could be a long wait.

As work under the Stem to Stern program continued, the ENGCOM staff codified their experiences. Kennedy asked the design engineers to prepare standard plans and specifications room by room so that the plans could be given to district and community (post) engineers for adaptation at any facility. ENGCOM headquarters also prepared lists of materials for faster and more accurate procurement. These standardizations had only limited value, because buildings varied from caserne to caserne and even within a single caserne.[74]

With the war in Southeast Asia continuing, money remained a problem for ENGCOM. By early 1969 the backlog of essential maintenance and repair reached $150 million, and Kennedy expected a reduction in the ENGCOM budget for fiscal year 1970. The staff continued to dwindle, making it difficult even to maintain the utility systems in place.[75]

Given the process for financing Stem to Stern work, ENGCOM could not make the best use of the money it received. Most of the money came at the end of the year from segments of USAREUR that wanted to commit unspent money before it reverted to the U.S. Treasury. ENGCOM always had a backlog of unfinanced projects, but it received the supplementary money very near the end of the fiscal year (30 June). This timing meant that the summer construction season was already well under way, activity was intense, and prices for contracts were correspondingly high. Year-end dollars thus produced fewer improvements than the command could have gained if it could have placed contracts during the winter.[76]

By the end of fiscal year 1969, the program had undertaken work at seventy-seven barracks buildings and nineteen mess halls, less than 10 percent of the facilities that needed attention. Nine months later, by the spring of 1970, Stem to Stern had spent $32 million for projects at about twenty casernes. Kennedy estimated that, at the current rate of repair, correcting two decades of neglect would take at least another fifteen years. He calculated that the program would require an additional $240 million for standard renovation and an additional $333 million to improve supporting utility systems. Kennedy readily acknowledged that Congress was unlikely to approve the money, certainly not "until the permanency of U.S. forces in Germany is settled once and for all."[77] It is startling in retrospect to realize that, after twenty-five years of the U.S. military presence in Germany, permanency remained an issue.

The Stem to Stern program and the deplorable conditions in the barracks began to attract attention in Washington. On a command visit in the spring of 1971, the Army chief of staff, General William C. Westmoreland, inspected renovated barracks. After the tour Westmoreland turned to Kennedy and asked, "Why don't you do this faster?"[78] At one point the general saw huge quantities of black smoke belching from the heating plant at Ferris Barracks in Erlangen. The scene convinced him of the need for remedial action, and he directed that ENGCOM convert the heating plant from coal to oil in spite of existing congressional restrictions. Within weeks of Westmoreland's visit, ENGCOM received orders from USAREUR's deputy commander in chief, Lt. Gen. Arthur S. Collins, Jr.: "As a first priority ... undertake a massive project for the rehabilitation of troop facilities to include messhalls [*sic*], sanitary facilities, and heating."[79] Between June 1968 and April 1972 USAREUR put more than $50 million into ENGCOM's Stem to Stern program.[80]

TAB VEE Program

A third priority program for ENGCOM grew out of experiences in Vietnam and in the Arab-Israeli War of 1967 that highlighted the vulnerability of aircraft parked on the ground. If the Soviet Union launched an attack, even conventional weapons could destroy a good portion of American air power in Europe. The Air Force therefore initiated a new building program that ENGCOM managed. Called TAB VEE (Theater Air Base Vulnerability Evaluation Exercise), the program aimed to improve runways and provide shelter for aircraft at air bases in Germany, Holland, and Turkey.[81] The designers assigned one fighter aircraft to each hangar, which consisted of simply constructed concrete walls on three sides and a slightly arched concrete roof. The hangars did not have doors, but they were located in a nonuniform pattern to minimize flak and blast damage. Earthen berms were placed against the walls in some instances, and roofs were painted in camouflage colors.[82]

TAB VEE construction began as a crash program in June 1968. The first projects involved improvements to the pavement in Ramstein,

Bitburg, and Hahn. Seven months after the start, the first aircraft shelters began to go up at Ramstein Air Base. By late 1968 the Air Force had won strong support in Washington for TAB VEE, and the estimate for future construction placement under the program jumped from $10 million to $50 million for fiscal year 1969. At that volume it constituted more than 60 percent of ENGCOM's scheduled construction placement for the year. TAB VEE remained a high-volume project for all of 1968 and 1969. It contributed to a record-breaking workload in design for February 1969, embracing 153 projects and an estimated construction cost of $129 million.[83] By January 1971 the TAB VEE program had accounted for $64.6 million in construction contracts for work at air bases in Ramstein, Sembach, Bitburg, Spangdahlem, Hahn, Erding, and Zweibrücken in Germany; Soesterberg in Holland; Aviano in Italy; and Incirlik in Turkey. By April 1972 ENGCOM had constructed 324 TAB VEE aircraft shelters.[84]

In high-priority programs such as TAB VEE it is commonplace to award contracts before final drawings and specifications are available. Although accustomed to that practice, the engineers still found the Air Force's initial specifications for TAB VEE distressingly imprecise. Furthermore, the requirements changed frequently as the program progressed, delaying completion dates and escalating costs.[85] ENGCOM's Construction Directorate had to respond to the Air Force's objections to these delays at the same time that it tried to maintain surveillance over construction projects and manage the indirect contracting. When the Air Force complained about the charges that ENGCOM levied to manage the program, General Kennedy flew to Washington to explain the complexities of indirect contracting and to defend ENGCOM's management of the program.[86]

ENGCOM Headquarters

An unexpected event interrupted ENGCOM's activities. In mid-November 1968 the two-story wood-frame building that housed command headquarters burned to the ground.[87] Built immediately after the war on the grounds of the I. G. Farben complex in Frankfurt, Annex B was designed with a central spine and six wings off the back of the spine. Although up to four people shared an office, every room had a window and trees surrounded the building. Some staff considered it a pleasant working environment; many regarded the building as a firetrap.

In November 1967 there had been a fire on the first floor beneath Kennedy's office. Flames burned through the floor between stories, and the desk used by Kennedy's sergeant major fell through to the floor below. After the fire was extinguished, gas cans were found in the area. Kennedy and others suspected arson, but there was no proof.[88]

A year later contractors were performing routine maintenance in the building. About 8:00 P.M. on 13 November, Kennedy received the news at his residence in Bad Vilbel of a fire. When he arrived at ENGCOM headquarters, one end of the building was blazing; fire fighters from Frankfurt had an inadequate supply of water and were losing the battle to extin-

guish the flames. As the fire burned, Kennedy and other staff members ran ahead of the flames, throwing files and office equipment out the windows. Local newspapers called it the biggest fire in Frankfurt since World War II. By 4:00 A.M. the building was gone; workers who arrived in the morning saw only the shell.

A skeleton staff crowded into a few rooms in V Corps headquarters and hurriedly arranged to lease an abandoned four-story factory building near the *Messe* (market building) in Frankfurt as temporary headquarters. Labor service troops cleaned the leased building and installed new boilers so operations could continue.

Kennedy wanted a new building for the command. USAREUR's commander, General Polk, was skeptical that the Department of the Army would approve funds. To make his case, Kennedy flew to Washington and met with the chief of engineers and officials at the Pentagon. They approved a new building that was somewhat smaller than Kennedy had wanted. Jacques Bouchereau coordinated design and construction of the building, a three-story rectangular design featuring large open spaces and few private offices. German contractors were encouraged to "do something good for Engineer Command" in calculating costs.[89] The completed building of pre-cast concrete cost about $12 per square foot, a reasonable rate at the time.

Groundbreaking for the new headquarters was held on Thursday, 3 July 1969. Building 31 was completed, except for outside paving and landscaping, on 15 January 1970. The day after an opening ceremony the staff moved in. For the first time the Army engineers in Europe had a new building that they did not share with any other organization.

Ammunition Storage Projects

One of the programs that continued under ENGCOM involved safe storage for ammunition. Attention to ammunition storage intensified as economic and demographic pressures moved the German population closer to U.S. military facilities.[90] By early 1968 seven storage projects approved as a part of the NATO budget for 1963 had reached varying stages of completion. One site remained behind the rest because of problems between the Federal Republic and the state of Hesse concerning the real estate rights for an access road.[91] Work on ammunition storage sites frequently involved removing and disposing of old ammunition, an operation that the German government insisted on controlling and for which its officials could find only one willing contractor.[92]

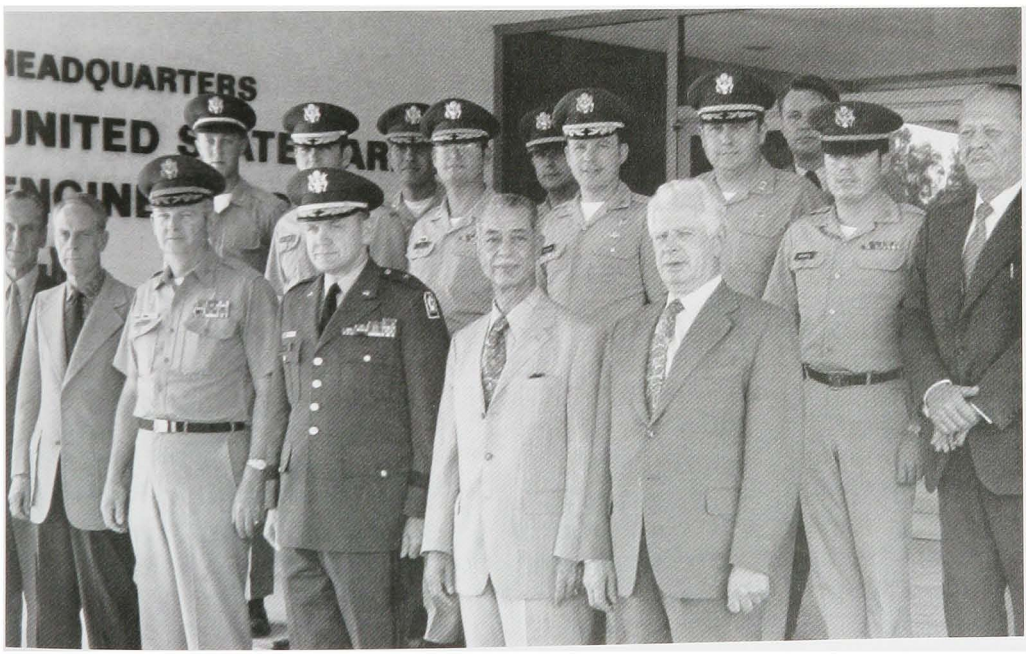
Incidents of terrorism in West Germany in the early 1970s prompted both NATO and the United States to consider the vulnerability of their ammunition storage facilities and to launch a program to improve security. The 59th Ordnance Brigade, commanded by Maj. Daniel Waldo, Jr., surveyed the storage sites in Europe north of the Alps and recommended installation of new security towers and fences. In late 1972 ENGCOM's commander anticipated needing $1 million in fiscal year 1973 to address

the critical requirements identified by the Ordnance Brigade's surveys. When planning began for the fiscal year 1974 budget, the command projected a construction program of nearly $13 million. Construction would extend into fiscal year 1977 and equip fifty-one sites with anti-intrusion devices, special fencing, guard towers, and lighting. The program, which continued to grow after 1974, was subsequently labeled the Long Range Security Program.[93]

Challenges in the 1970s

General Kennedy completed his tour as commander of the Engineer Command in June 1971 and retired. His successor, Brig. Gen. Carroll N. LeTellier, a graduate of the Citadel, had served in Germany between 1956 and 1959 and again in 1966 and 1967 when he commanded the 10th Engineer Battalion in Kitzingen.[94] ENGCOM's first commander, Colonel Young (later Major General), recruited LeTellier to replace the retiring Col. A. Darby Williams as deputy commander and chief of contract construction of ENGCOM. LeTellier arrived in Frankfurt in October 1967, just as Young was leaving. LeTellier served first as chief of the Construction Directorate of ENGCOM and then from May to August 1968 as director of troop operations. In August 1968 LeTellier volunteered for a tour in Vietnam. In June 1971 he was promoted to brigadier general; the next month he assumed command of ENGCOM.[95]

When LeTellier returned to ENGCOM as commander, he found an organization that had more than 570 design and construction projects



General LeTellier and His Staff in the Early 1970s

with an in-place construction value of $434 million. The Vietnam War, budget restrictions, and difficulties in recruiting, however, had reduced the workforce to about 19,000 (a drop of about 2,000).[96]

The command continued to face strong outside criticism. Community commanders still resented having to go outside their own staff for approval of construction on their installations. LeTellier believed strongly in ENGCOM's centralized authority and in its consolidation of engineer resources. To counter the criticism and promote a more positive self-image within ENGCOM, LeTellier used the command's fifth anniversary as the occasion to set up an ad hoc committee to review the past and project a five-year plan. He observed that ENGCOM had "developed habits and procedures through managing one crisis after another, sudden releases and sudden withdrawals of funds, [and] continuous reorganization studies involving roles and missions."[97] LeTellier hoped that the long-range plan would help the command move beyond crisis management.

During 1965–1972 ENGCOM's overall workload and the numbers of staff increased. (*Table 4*) By early 1972 ENGCOM had more than thirty NATO infrastructure projects under design, including missile installations, radio relay stations for the Nike and Hawk systems, special ammunition storage sites, controlled-humidity storage warehouses, and tactical and training sites. Ten other infrastructure projects with a value of about $2 million were already under construction.[98]

Between 1967 and 1970 the Alternate Construction Program, funded by the Federal Republic, had grown from $3.4 million to $11.8 million annually. In 1972 seven alternate construction projects were under design, including housing units in Mainz, Fürth, and Katterbach (near

Table 4

Engineer Command Construction Placement and Staffing
1965–1972

Placement and Personnel	1965*	1966*	1967	1968	1969	1970	1971	1972
Placement ($ million)	26.0	30.0	19.9	20.0	48.2	75.7	69.7	100.0
Staff (actual)	77	82	87	92	93	104	127	141
Temporary duty	0	0	0	0	27	25	20	0
Temporary and over-strength	0	0	0	0	0	32	40	47

Source: EUD Graphics file

*Work conducted by the Engineer Element.

Nuremberg); an access road near Giessen; and an airfield in Bonames near Frankfurt. Another thirty active construction projects had a value of about $31 million.

Modernizing U.S. Facilities

By early 1972 ENGCOM managed nearly thirty separate construction programs.[99] One of the newest and largest was renovation of U.S. military facilities paid for by the Federal Republic of Germany.[100] From 1945 until the activation of the Engineer Command more than twenty years later, improving facilities used by U.S. forces had low priority because of scarce resources and the predilection of local commanders for high-visibility projects. LeTellier termed the inclination of commanders for projects that showed visible results during their tours the "eighteen-month syndrome." Plumbing, wiring, heating plants, and sewage lines—invisible maintenance projects that failed to garner much notice and thus little credit for anyone—received little attention. The Stem to Stern program tried to address these mundane needs, but it took care of one caserne at a time, with never enough money to improve more than a small fraction of the casernes in any one year. LeTellier called it a "never catch up" program.[101]

On 10 December 1971, the United States signed an accord with the Federal Republic whereby the West German government agreed as part of the burden sharing to contribute DM 600 million for the renovation of U.S. military facilities in West Germany (almost $170 million at the official exchange rate). The agreement for Modernization of U.S. Facilities (MOUSF) formed part of the recurrent West German effort to respond to pressures from the United States to offset the costs of the American military presence. Of the DM 600 million made available by the West German government, DM 576 million, or 96 percent, was designated for USAREUR. As a result, ENGCOM had two similar programs to administer simultaneously—Stem to Stern, which used dollars from USAREUR's budget for Operations and Maintenance, Army, and MOUSF, which was funded with Deutschmarks.[102]

The Army engineers had far more freedom in using MOUSF money than in using appropriated dollars.[103] The congressional mandate that halted the conversion of boiler/heaters from coal to oil under Stem to Stern, for instance, did not apply to MOUSF work. Starting in 1972 the Federal Republic began renovating boilers and heating plants in accordance with specifications and technical instructions supplied by ENGCOM.[104] The distinction between dollar-funded and Deutschmark-funded work remained important into the 1990s. Improvements funded by dollars have residual value. As the U.S. military turned facilities over to the Germans, the U.S. government could claim compensation for dollar-funded improvements but not for improvements made under the MOUSF program.[105]

Payments for work contracted in Deutschmarks were complicated by the changes in the international system of exchange rates for cur-

rencies. In early August 1971 the United States abandoned gold payment on foreign-held dollars; and the value of the dollar on international money markets suddenly dropped, meaning that the dollar bought considerably less in German money or services. By 16 August ENGCOM's comptroller, Lt. Col. John L. Buxton, had calculated that the command needed an additional $1.5 million to cover the increase in outstanding obligations and commitments associated with the decline in the dollar's value.[106] A second difficulty arose from the Army regulation that ENGCOM had to convert any money that it held into dollars. Because of this requirement, the command lost money twice when settlement of the obligation would be in Deutschmarks—once on the exchange from marks to dollars and again on the exchange from dollars back to marks to pay the bill. Buxton's deputy, Randolph S. Washington, proposed creating a limited deposit account for marks in a local bank; ENGCOM could use that account to pay German contractors doing work under any program that involved only marks. LeTellier supported the idea, and ENGCOM opened an account despite resistance in Washington.[107]

The tempo of modernization of facilities increased and came to represent the dominant program during most of General LeTellier's command. By April 1972 ENGCOM had managed the partial renovation of 226 barracks and 26 mess halls under Stem to Stern and had placed contracts for another 160 barracks and 31 mess halls. In the first two years of MOUSF, the command completed designs on 283 barracks and 91 mess halls and awarded contracts for the renovation of 77 barracks. Designs were ready on another set of contracts for work on 251 more barracks and 74 mess halls under a later phase of MOUSF.[108]

ENGCOM quickly initiated the renovations supported by MOUSF funds using available designs prepared under the Stem to Stern program. Construction on the first MOUSF project began in January 1972, just twenty-two working days after the agreement was signed. Saul Fraint, chief of technical engineering, established procedures for the program, coordinated design development, and worked with installation personnel on construction schedules. Two architect-engineer firms (Louis Berger with offices in Frankfurt and McGahey, Marshall, and McMillan with offices in Italy) were the principal designers.[109]

The MOUSF program, which concentrated on barracks and dining facilities, did more extensive renovations than Stem to Stern, including suspending acoustical ceilings in dining facilities; completing new shower and latrine facilities; and installing partitions in buildings, facilities for washers and dryers at a ratio of one per thirty soldiers, and mail boxes. Utility systems were totally replaced. The dining halls received all new equipment, funded with dollars and purchased in the United States to help counter the unfavorable balance of payments. To minimize disruption for the troops who continued to live and work at the casernes during the renovations, supervisors and contractors had to maintain a continuous supply of utilities and shift the men and

their equipment from one facility to another as the renovations progressed.[110]

As the work under MOUSF increased, Stem to Stern tapered off; in 1974 the program ended officially. As the money made available in December 1971 was progressively committed, design for future MOUSF projects also began to slow. In late April 1974 a second MOUSF agreement between the United States and the Federal Republic made DM 600 million available for additional renovations ($203 million at the official exchange rate); USAREUR received DM 503 million, about 84 percent.[111]

Upgrading Remote Sites

Attention shifted in the 1970s to U.S. military sites located in remote areas. These installations included communications sites (listening posts), monitoring stations along strategic borders, and missile-launching sites. Generally, the locations were secret as well as remote. Both staff and materials usually had to be flown in by helicopter, and regulations prohibited the ENGCOM staff from taking photos of the construction. The sites were small and their facilities sparse: a building for living quarters, sometimes a separate dining facility; warehouses or preparation buildings; and concrete slabs at the missile launching sites. In some locations a perimeter fence was not necessary. Initially, many sites did not have commercial power.[112]

Located as they were, these installations were not part of a community and did not have a network of support. ENGCOM tried to furnish them with modular prefabricated structures that could be transported by helicopter and assembled in a variety of configurations, depending on site conditions and need. Starting in 1968, ENGCOM began erecting low-cost prefabricated structures from Yugoslavia. On eight sites for the armored cavalry stationed around Fulda, ENGCOM erected twenty-five buildings. The work was deemed minor construction, and each project had a limit of $25,000. To stay within budget, ENGCOM eliminated floor tiles, paint, and other items considered optional. This sort of expedient compromise produced facilities sufficient to complete the mission but severe enough to prompt complaints from the users once the sense of urgency had passed.

In the first half of 1973, MOUSF money became available to improve thirty-five remote sites. ENGCOM solicited bids through the *Bautechnische Arbeitsgruppe* for prefabricated buildings at several sites; other sites called for construction to be done by labor service units and engineer troops. The improvements included barracks, dining facilities, administrative buildings, recreational facilities, portable toilets where there were no residents, and construction of external sewage and water supply systems. MOUSF made $16 million available to ENGCOM to acquire relocatable, prefabricated, air-transportable units and to install them and the utilities to support them. By the end of 1973 work had begun at several sites, but almost 90 percent of the 302 remote sites remained to be upgraded under later programs.[113]

The Phaseout

Consolidation of engineer resources under ENGCOM continued to meet resistance into the 1970s. The negative attitude emanated from the staff at USAREUR headquarters, commanders of military communities, TASCOM, and Washington. In August 1968 a member of a systems analysis team from the Office of the Secretary of Defense remarked on the "general difficulties that were being experienced in accepting the Engineer Command."[114] Continuing skepticism and outright hostility—often cloaked in "data" and presented in lengthy studies—could be traced to three facts. First, community commanders in USAREUR resented ENGCOM's authority over engineer resources that had been available to them previously for work on their installations. They complained that they could not execute their mission effectively when important members of their staff answered to another command. Second, because the Office of the Chief of Engineers did not manage contract construction in Europe—as it did for military commands elsewhere around the globe—ENGCOM had no advocate in Washington. Third, the distinctions between the services provided by ENGCOM and by TASCOM were not clearly delineated.

Both ENGCOM and TASCOM offered support for base operations. ENGCOM concentrated on the engineering functions associated with repair and maintenance, and TASCOM assigned facilities and retained the logistical and procurement functions of the earlier Communications Zone in France.[115] Initially, each command operated through eleven districts in West Germany. In late 1968 TASCOM reduced the number of its support districts by half to six. (*Map 12*) In 1970, under pressure to conform, ENGCOM grudgingly reduced the number of its engineer districts, using the same boundaries as TASCOM. (*See Map 13.*) The reorganization focused on simplifying the military communities' access to support; it also placed the headquarters of the support and engineer districts in the same city and, with two exceptions, in the same barracks or caserne. The simplification did not work. Local commanders complained that they never knew whom to call when they had a problem. The confusion was compounded because ENGCOM also maintained resident engineer offices to handle contract construction.[116]

None of ENGCOM's positive achievements—FRELOC, barracks renovation, boiler conversion, TAB VEE, remote site upgrades—changed the negative attitude toward the organization. In addition, a larger issue remained: Did USAREUR need two separate commands providing support services?

In 1971 USAREUR's deputy chief of staff, operations, published a study, "Project FENDER: An Examination of the Missions, Organization, and Functions of the U.S. Army Engineer Command," concluding that TASCOM could effectively incorporate ENGCOM's functions. The study reluctantly recommended retaining ENGCOM because of work in progress on Stem to Stern and the ongoing negotiations with the Federal Republic concerning what some months later became the MOUSF program.

Map 12

During 1972, discussions on the future of ENGCOM intensified. The recommendations of FENDER II, issued 22 March 1972, proposed reducing ENGCOM's role to that of an agency assigned to TASCOM while retaining the coordination of the three major engineer functions—facilities engineering, troop construction, and contract construction—under

Map 13

one headquarters. USAREUR deferred any decision on subordinating ENGCOM to TASCOM, but it did direct the USAREUR engineer and ENGCOM to eliminate redundant positions and reduce their staffs by twenty-seven and fifty-three positions, respectively.[117] In April, coinciding with the circulation of the FENDER II recommendations, Maj. Gen. Francis

P. "Frank" Koisch arrived in Heidelberg as USAREUR engineer. Koisch quickly concluded that USAREUR did not have the kind of organization that could accomplish its tremendous construction workload. He decided that Europe needed the equivalent of an engineer district.[118] In November USAREUR ordered a study of the structure of the military communities in the Federal Republic. The far-reaching Project RED WHEEL study coincided with Department of Defense demands that the Army reduce the size of "management headquarters." The conjunction of pressures prepared the way for a major reorganization of the U.S. Army in Europe.[119]

General LeTellier vigorously defended the ENGCOM integration of contract construction, troop construction, and facilities engineering in a vertical structure of command. Like his predecessors, Generals Young and Kennedy, LeTellier thought it the most efficient and effective way to provide engineer services to the U.S. forces in Europe. In August 1973 LeTellier was reassigned to the United States to head the South Atlantic Division. As he prepared to leave Europe, he composed a ten-page report for the commander in chief of USAREUR, General Michael S. Davison. In addition to addressing a number of general topics related to the engineer mission, LeTellier expressed concern about the future of the Engineer Command. He observed that ENGCOM had been "a step-child during the allocation of resources and the 'whipping boy' when supported organizations evaluate the style of life to which they believe they are entitled."[120]

Brig. Gen. James C. Donovan succeeded LeTellier at the Engineer Command. Donovan had served as area engineer in Metz, France, and as chief of the Design Branch in the U.S. Army Construction Agency, France, from 1959 to 1962. He came to Germany as a new general officer after three years as district engineer in Sacramento.[121]

By the time Donovan arrived in Europe, ENGCOM was under siege from several directions. The insistence in the Senate to reduce the presence of U.S. forces in Europe and a general retrenchment as the Vietnam War wound down created pressure for change in USAREUR. Secretary of Defense James Schlesinger's mandate to increase the ratio of combat forces to support forces—the "tooth-to-tail" ratio—was a manifestation of the changing atmosphere. The increase in the volume of ENGCOM's work, shortages in the officer ranks, difficulties in

General Donovan

recruiting German employees, and budget constraints added to administrative problems. As 1974 approached, the command faced the prospect of running $14 million short of covering its salaries, utility bills, heat, and other fixed costs.[122]

In September 1973 two operating principles crystallized in the Department of the Army: Community commanders should control their own resources and personnel committed to all support activities, and USAREUR should cut its headquarters and management personnel sharply. In response, the USAREUR staff prepared a report titled the "Consolidation of Headquarters and Area Support Elements" (Project CHASE), which outlined a major reorganization in Europe. Project CHASE recommended the abolition of both TASCOM and ENGCOM. To give community commanders in Europe greater control over resources, the plan transferred ENGCOM's responsibilities for facilities engineering to the regional commands: V Corps in Frankfurt, VII Corps in Stuttgart, and 1st Support Brigade in Kaiserslautern. To reduce headquarters, ENGCOM's contract construction functions passed to the OCE in Washington. TASCOM's responsibilities were distributed among the military communities, the USAREUR engineer, and the new 1st Support Brigade (later 21st Support Command).[123]

On 7 February 1974, the USAREUR commander in chief, General Davison, approved the basic proposals outlined by Project CHASE for reorganization of engineer resources in Europe. With ENGCOM's three major responsibilities removed, the core of the organization disappeared. The Office of the Engineer in USAREUR could assume authority over troop construction, real estate, and the U.S. Army Topographic Center.[124] The pressures that General O'Meara had successfully overcome in 1965 and 1966 won out in 1974.

As soon as General Davison made his decision to redistribute engineering resources in Europe, USAREUR in Heidelberg, OCE in Washington, and ENGCOM headquarters in Frankfurt initiated planning to implement the new arrangement. Chief of Engineers Lt. Gen. William C. Gribble, Jr., created a new division and named General Donovan to command it, with Donovan's chief of staff, Col. Edwin S. Townsley, to serve as deputy division engineer. Townsley took charge of establishing policies and coordinating procedures for the transition, appointing the deputy comptroller, Randolph S. Washington, as action officer. The chief of engineers assigned members of his Washington staff to work with Townsley on administrative and managerial tasks such as drawing up support agreements with USAREUR and drafting organizational plans and procedures so that the new division would conform to Corps of Engineers structure and practice.[125]

To reassign the 25,000 people from the support commands being inactivated, the receiving organizations had to write provisional descriptions for the transfer positions, develop tables of distribution and allowances, and prepare formal job descriptions to be processed through the Civilian Personnel Office. The process was tedious and laborious.[126]

The positions associated under ENGCOM with contract construction passed to the new Engineer Division. Administrative support positions attached to ENGCOM headquarters were transferred to the three regional USAREUR commanders to provide manpower for base support functions.[127] These transfers left the new division without the positions necessary to support contract construction, its principal mission. Although the Office of the Chief of Engineers authorized a manpower level of 438 for the division, USAREUR transferred only 310 spaces from ENGCOM and the division received only 280 people who had experience or training in contract construction.[128]

OCE's deputy chief of engineering, Frederick B. McNeely, headed a team of nine people who worked in Frankfurt during April and May 1974 to set up the administrative structure for the new Corps of Engineers. They reviewed staff functions and procedures and wrote job descriptions. Despite their efforts, many employees waiting for new assignments worked the summer of 1974 without knowing to which position, at which grade, or in what branch they would be assigned.[129]

Special attention was given to the Germans who had worked in the Engineer Command. They were indirect-hire employees paid in Deutschmarks by the Federal Republic. USAREUR reimbursed the Federal Republic for their salaries and benefits and paid an administrative surcharge.[130] Over the years USAREUR had signed a series of tariff agreements with the Federal Republic which affirmed that U.S. forces employing local employees would comply with German labor laws on issues of pay, annual leave, sick leave, maternity rights, hours, holidays, and termination procedures.[131] USAREUR and the OCE agreed that the OCE would not negotiate an independent agreement with the Federal Republic. Germans hired to work in the new division would continue to be included with the USAREUR budget and work under USAREUR agreements. Thus, the Germans working at the Engineer Division were not employees of the Corps of Engineers.

On 1 July 1974, the OCE activated the United States Army Engineer Division, Europe, and a new chapter in the organization of engineer functions for Europe began. The Engineer Command had undertaken major new projects, including FRELOC construction, facilities rehabilitation under Stem to Stern and MOUSE, and TAB VEE. It had also continued projects begun under predecessor organizations—converting heating plants; building missile and weapons sites; providing hardstand parking for tanks and other military equipment; securing ammunition storage facilities; and building schools, chapels, and recreational facilities. Construction placement in 1974 totaled $152 million, a 50 percent increase over 1972. Although the Engineer Command ceased to exist, the construction mission continued.

PART THREE

THE EUROPE DIVISION 1974–1991

INTRODUCTION

The Europe Division of the U.S. Army Corps of Engineers began its activities in a geopolitical environment in which the status quo was more settled than at any time since 1945. The relative stability occurred because the four powers that had occupied Germany had reached an agreement in September 1971 on the status of Berlin. In the agreement the United States, France, Great Britain, and the Soviet Union all recognized the right of each power to remain in Berlin in its respective sector. The accord affirmed the special relations between West Berlin and the Federal Republic of Germany without, however, conceding that the city was a part of West Germany.

The four-power accord formed part of German Chancellor Willy Brandt's new policy toward the East, *Ostpolitik*, which he had pursued with energy since assuming leadership of West German's government in 1969. Using the concept of "two states within one nation," Brandt linked the Berlin settlement to a formal accord, the Basic Treaty, signed in December 1972 with East Germany. The treaty gave de facto acknowledgment of the German Democratic Republic without granting the full diplomatic recognition that the East German regime wanted. Still, in September 1973 the two German states were admitted to the United Nations as separate sovereign entities. West German *Ostpolitik* included not only the stabilization of Berlin and the intra-German Basic Treaty, but also a series of agreements that the West German government signed with eastern neighbors: the Soviet Union, Poland, and Czechoslovakia. These agreements confirmed West German acceptance of the territorial status quo of the post-1945 settlement in Eastern Europe and thereby resolved one of the most potentially troubling aspects of the postwar settlement.

Ostpolitik did not mean that the Cold War was over, only that political conflict between East and West in Europe had become less volatile and that the tensions surrounding Berlin, long a flashpoint, had diminished. The military threat represented by the Soviet Union and the Warsaw Pact nations remained the focus of the strategies and tactics that dominated the thinking of U.S. military planners. Nonetheless, the more stable territorial situation allowed these planners to rethink issues such as troop deployment, training, and the relative strength of combat forces to support forces, a debate that came to be labeled the tooth-to-tail ratio. The reassessments led to the rotation of combat brigades from the United States to West Germany, construction of a new garrison in northern Germany near Bremerhaven, and construction of storage facilities for equipment and ammunition needed to support the rotation exercises and U.S. combat units stationed in Europe. During the 1970s military planners

also had to pay increasing attention to the vulnerability of ammunition and weapons stored in Europe to terrorist attacks. This attention led to the long-range security program, a design and construction effort to enhance the security of storage facilities.

While the United States and its NATO allies sought to improve the readiness of their military forces, so did the Soviet Union. One of the most significant developments of the 1970s involved the deployment by the Soviet Union of the SS–20, a new generation of intermediate-range missile. This missile was a multiple independently targeted reentry vehicle with a range of 3,000 to 5,000 miles. The SS–20 carried several nuclear warheads that were released at the height of its trajectory; each warhead was independently programmed to hit a different target, thus increasing the difficulty of defending against them. The missiles were also easily moved and therefore hard to detect and track. Furthermore, the missiles released their warheads much closer to their destination than to their launching point and thereby increased the probability that at least some nuclear devices would reach their targets.

The SS–20 worried West European statesmen. Its range made all of Europe's major cities susceptible to nuclear attack—German cities could be struck twenty minutes after launch—and locations in the Middle East, South Asia, and China were equally as vulnerable. West European leaders feared that the Soviet tactical superiority, even if temporary, would create pressures to make political concessions unless the United States could take countermeasures. German Chancellor Helmut Schmidt vigorously promoted deployment to Western Europe of U.S. missiles—the Pershing II and ground launched cruise missiles—comparable to the SS–20. At a mid-December meeting of the NATO Council in 1979, the member states approved the deployment but coupled the decision with a resolution to seek a negotiated removal of the Soviet missiles. The Soviet invasion of Afghanistan in late December, only two weeks after the decision of the NATO Council, hardly encouraged optimism. Nonetheless, NATO policy throughout the 1980s followed the two tracks of negotiation and preparation for deployment. Thus, U.S. Army engineers prepared to install the new U.S. intermediate range missiles while diplomats representing NATO pursued negotiations with the Soviet Union to remove the SS–20s and reduce the level of arms in Europe.

When the threat of the Soviet SS–20s arose, U.S. commanders in Europe, particularly in Germany where the largest number of troops served, became acutely aware of the abysmal living conditions that their troops faced in barracks and in family housing. The effort to improve morale and welfare by funding remedial and new construction of barracks and housing greatly expanded the construction activities of the Europe Division during the 1980s.

The Europe Division managed construction in Europe for the U.S. military from the early days of 1974 though the 1970s and 1980s. The division succeeded in building the installations to support the new missiles while it handled the expansion of construction on housing, welfare, and recreation facilities that developed in the 1980s. While its staff and work-

load expanded to deal with the growing volume of construction, the diplomatic efforts toward arms reduction also bore fruit. In December 1987 the United States and the Soviet Union signed an agreement on the reduction of intermediate-range nuclear forces—the INF Treaty—that called for the elimination of these missiles from the arsenal of both powers. The success in reducing the level of armaments aligned across Cold War barriers in Europe presaged even more dramatic changes that overtook the Continent during the following several years and that brought an end to the Cold War.

7

THE TRANSITION PERIOD 1974–1978

The establishment of the United States Army Engineer Division, Europe (USAEDE), on 1 July 1974 marked the first time that the chief of engineers rather than the theater commander controlled contract construction for U.S. forces in Europe. Although the line of authority and command governing engineer services was new, the tasks remained much the same. On both sides of the Atlantic, people worked to make the transition from the United States Army, Europe (USAREUR), to the Corps of Engineers successful, to redistribute the resources of the Engineer Command (ENGCOM), and to reorganize USAREUR's other support services. The organizational changes affected thousands of Americans and Germans working in Europe.

The Corps of Engineers introduced a new culture and a different way of doing business. The people working in Frankfurt and throughout the area covered by USAREUR already had years of experience doing business in Europe and thought that their experience would be valued. In spite of the tensions that developed, division personnel provided the services expected of them. On a purely administrative level, the reassignment of people and distribution of resources was completed quickly; but the transition period persisted through 1978, and turbulence and dislocation remained the dominant feelings recalled by those who lived through it.

Brig. Gen. James C. Donovan, serving under the USAREUR commander in chief, commanded the new division only until mid-August 1974, when he was reassigned.[1] It fell to Donovan's successor, Brig. Gen. Louis W. Prentiss, Jr., to shape the new entity as an operating division of the Corps of Engineers. And it was the task of his successor, Brig. Gen. Norman G. Delbridge, Jr., to forge a cohesive organization from the "old-timers" who remained and the "newcomers" from the United States.

New Management

General Prentiss, whose father had been deputy theater chief engineer under United States Forces, European Theater, in 1946–1947, report-

ed in Frankfurt on 1 September 1974. He was the first division engineer to serve under the chief of engineers in Washington. Prentiss came to Frankfurt from Stuttgart, where he had served as commander of the 7th Engineer Brigade, VII Corps engineer, and community commander since July 1973.[2] Prentiss graduated from the U.S. Military Academy in 1950 with Donovan. As a new lieutenant, Prentiss served three years in Germany with an artillery unit. When he returned to Europe in 1973 as the staff engineer for the VII Corps commander, Lt. Gen. George S. Blanchard, Prentiss heard firsthand the dissatisfaction of the corps commanders with the Engineer Command.

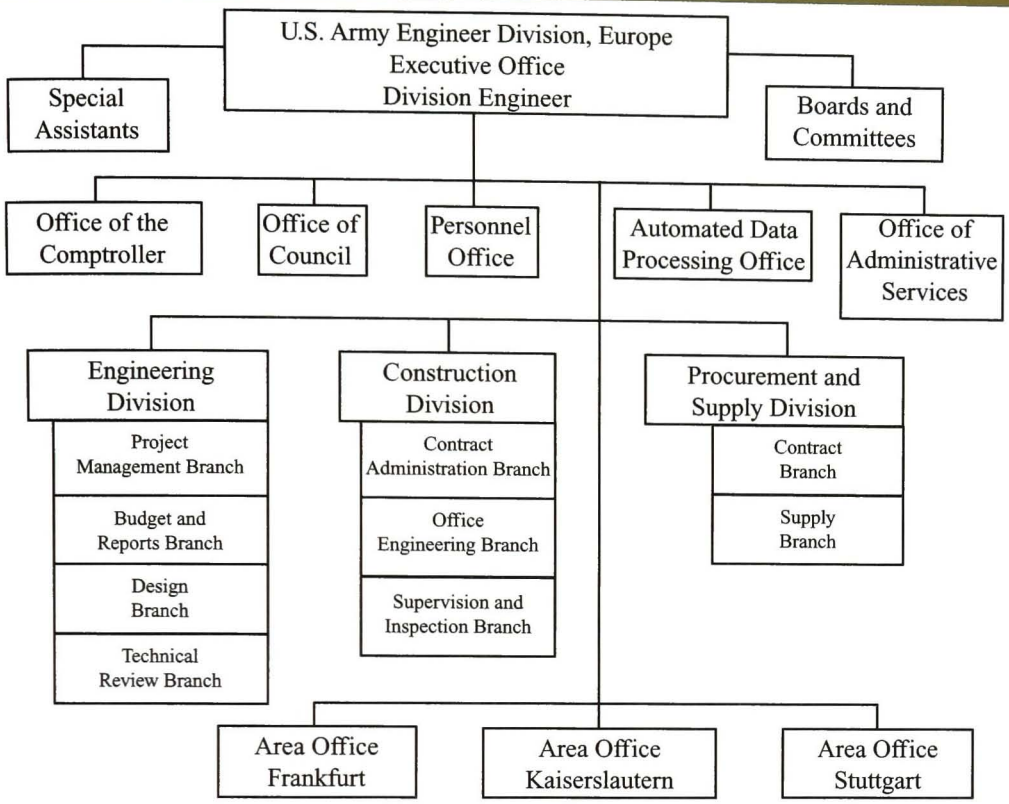
General Prentiss

The agreement of April 1974 transferring engineer functions from the commander in chief of USAREUR to the chief of engineers defined USAEDE's responsibilities very generally: to plan, direct, and supervise design and construction of new military construction and family housing programs; to inspect and supervise design and construction carried out for the Army by host-nation agencies under indirect contracting; and to furnish design and construction services on a reimbursable basis as requested by USAREUR.[3] Because USAEDE was an operating division, headquarters incorporated both the oversight and review functions assigned to a stateside division and the contracting and project management functions assigned to a stateside district. Civilian administrators from the Office of the Chief of Engineers (OCE) had worked with the organization's deputy division engineer, Col. Edwin S. Townsley, and other staff to create the structure.[4] (*Chart 10*) Prentiss found the new engineer organization still in its formative stages.

Exactly how the USAEDE would fulfill the terms of the April agreement became one of Prentiss' major concerns. Between April 1974 and January 1976, the division negotiated a dozen supplemental or implementing agreements covering such matters as USAREUR's provision of civilian personnel and real estate services, base support, funding and billing, and the services that the division would provide to USAREUR regarding North Atlantic Treaty Organization (NATO) construction and recoupment, Alternate Construction, and project development.[5]

Prentiss and division staff also had to establish internal operating procedures and mold the organizational pieces of the division into a function-

Chart 10: Organization of the Europe Division, 1974



ing whole. Adding to the challenge, the division was understaffed; and Prentiss faced low morale, changes in senior leadership, additions in territorial responsibility, and growth in the workload. Years later he recalled his tour as "a very difficult period, because nothing was normal."[6]

The issue of what name the new organization would use was symptomatic of the need to define everything. Although officially designated the United States Army Engineer Division, Europe, the organization's common names became European Division and EUD. After the Corps of Engineers became a major command in 1979, headquarters asked the division in Frankfurt to use the name Europe Division. EUD continued to be the most frequently used short designation.[7]

Administrative tasks in the early weeks included organizing recruitment, drafting procedural documents, implementing Corps of Engineers reporting systems, establishing field offices, and purchasing equipment. This work was complicated by uncertainties regarding levels of funding and staffing and by changes in mission assignments.[8]

Area Offices

The 1974 reorganization of USAREUR created three regional commands—V Corps, VII Corps, and 1st Support Brigade (later 21st Support

Command)—and each region became the focal point for the base support functions and the facilities engineering support previously provided by the Theater Army Support Command and ENGCOM. The headquarters of each region provided utilities and maintenance and limited engineering design to the community commanders who managed installations within the regions. (*Map 14*) The Europe Division provided support when engineering tasks exceeded the professional skills available through the regional staffs.[9]

By terms of the agreement between USAREUR and the chief of engineers, the Europe Division located area offices with V Corps headquarters in Frankfurt, with VII Corps headquarters in Stuttgart, and with the 1st Support Brigade headquarters in Kaiserslautern. During the first year the division headquarters struggled to provide personnel and administrative assistance for the area offices and their subordinate resident and project offices. Because of other priorities, the division gave staffing and support of the three area offices secondary consideration.[10]

Initially, military and civilian personnel who had served in ENGCOM's resident offices staffed EUD's field offices.[11] Many of the positions previously held by military officers were converted to civilian slots. Nevertheless, the division had considerable difficulty stabilizing the military leadership in the area offices. In late 1974 Lt. Col. John L. Buxton, former comptroller of ENGCOM, was named area engineer in Frankfurt; Lt. Col. M. R. Carson served in Stuttgart. A civilian, E. M. Grigsby, served as acting area engineer in Kaiserslautern until Maj. Robert M. Faxon took over early in 1975. In July 1975 Maj. Brian W. Teates, Jr., replaced Faxon, and on 1 August Lt. Col. T. L. Doherty replaced Carson in Stuttgart.[12] This rapid turnover of leadership in the area offices complicated the effort to achieve stability.

Despite the organizational changes in Frankfurt, field offices continued to oversee construction projects, even with inadequate administrative support. Jim Wise, a civilian from the Fort Worth District on temporary duty in Bad Kreuznach, reported that the secretary in the field office there had established a barter arrangement with local German contractors:

> I was just flabbergasted, coming from a structured and long-standing organization in the States, [where] logistics is something you don't even think about. Simple things like supplies—typewriter ribbons, paper, pencils, paper clips, all that type stuff—we couldn't beg, borrow, or steal within the organization. Our people were typing letters for contractors in exchange for supplies![13]

Dave Cox, assigned to the Würzburg resident office in late 1974, recalled the chaos of new procedures, the limited support, and difficulties acquiring and maintaining vehicles.[14]

The creation of a fourth area office severely taxed the division's resources. In May 1975 EUD activated the Northern Area Office in Dortmund to manage two growing construction programs—aircraft shelters and

U.S. ARMY, EUROPE
WEST GERMANY
1975
Regional Boundary (approximate)
Regional Headquarters
0 50 100 150 Miles
0 50 100 150 Kilometers
DENMARK
NORTH SEA
NETHERLANDS
1ST SUPPORT BRIGADE
POLAND
BERLIN
Elbe R
EAST GERMANY
V CORPS
BELGIUM
Rhine R
Frankfurt
Main R
LUXEMBOURG
CZECHOSLOVAKIA
Kaiserslautern
1ST SUPPORT BRIGADE
VII CORPS
Danube R
Stuttgart
FRANCE
Rhine R
SWITZERLAND
LIECHTENSTEIN
AUSTRIA

Map 14

ammunition security—centered in the Netherlands, Belgium, and northern Germany. The chief of engineers, Lt. Gen. William C. Gribble, Jr., denied Prentiss's request for an additional lieutenant colonel, but Prentiss obtained a transfer for Lt. Col. Roy A. Brown, who was already in USAREUR and eager to change assignments.[15] When the new office opened, the other three area offices were renamed with geographic designations: the Central Area Office (Frankfurt), the Southern Area Office (Stuttgart), and the Southwest Area Office (Kaiserslautern).[16] (*Map 15*)

EUD established a fifth area office when the Corps of Engineers reorganized military construction activities in the Mediterranean. Beginning in 1952 the Mediterranean Division had performed design and construction for U.S. forces and other U.S. agencies in Africa and the Middle East. Since 1957 it had also supervised construction for U.S. forces in Italy, Greece, and Turkey. By the mid-1970s, 90 percent of the division's work had shifted to Saudi Arabia and work in Italy and Greece had declined. The work in Turkey all but stopped as a result of the reaction of the Turkish government to an arms embargo imposed by the U.S. Congress in the wake of the Turkish-Greek clash over Cyprus in 1974.[17] In January 1975 the Office of the Secretary of Defense circulated a draft audit report recommending a general reorganization in which the Mediterranean Division would merge with the Europe Division.[18]

OCE strongly objected to this suggestion and cited political, logistical, and economic reasons against the merger. Politically, Saudi Arabia wanted to have the engineer headquarters in its own capital. Logistically, EUD would be strained "beyond its capabilities" if it tried to supervise work from the North Atlantic to the Arabian Peninsula. Economically, OCE argued, the savings that had been predicted from consolidation were "greatly overstated."[19] USAREUR responded that while it had no particular interest in how the Corps of Engineers organized its work around the world, it had a strong interest in any change that would "bring all NATO construction functions under EUD cognizance." USAREUR also expressed opposition to the transfer of any functions to Europe Division not related directly to NATO.[20]

Out of this exchange, the Corps of Engineers developed a plan to retain two divisions but to redistribute responsibilities. In 1976 the Mediterranean Division was inactivated and a new Middle East Division was established with its headquarters in Riyadh, Saudi Arabia. EUD took over responsibility for military construction in NATO member states south of the Alps and established the Mediterranean Area Office at Camp Darby, near Livorno, Italy, with Lt. Col. Kermit Oelberg as area engineer.[21] Personnel from the inactivated division staffed the office, which included a design section of about twenty Italians. By June 1976 EUD assumed management of the personnel and projects of the Mediterranean Division for work in Italy, Greece, Turkey, and Portugal.[22]

The volume of work that EUD inherited south of the Alps was not large—construction placement between $10 million and $20 million annually in the 1970s—but the geographic expanse was considerable. Prentiss

Map 15

knew that supervising that work in the new countries added expenses and problems of communications and transportation to EUD's budgetary and management responsibilities. He requested help from OCE to facilitate travel and communications, arguing that "bluntly, we cannot perform

the mission down there without an aircraft." EUD finally received an airplane in late 1976, several months after Prentiss had left.[23]

Staff Continuity and Morale

A constellation of problems in the Europe Division's headquarters confronted Prentiss during his first months at EUD. The division had four major categories of employees: military personnel, Department of the Army civilians (DACs), Germans, and dependents of other military and civilian personnel serving in Europe (dependent hires). The division had only a few military officers, all in supervisory positions. Some positions had been designated for German citizens, and these employees provided stability in the work force. Employees carried over from the Engineer Command initially occupied the positions designated for DACs, but division leaders had the most flexibility of recruitment and selection in this category.

In the transition from the Engineer Element to the Engineer Command in 1966, experienced civilian personnel had been encouraged to stay on, but in 1974 leaders at OCE in Washington thought that the transition offered "the opportunity to make some needed personnel changes in the engineer hierarchy then in Europe."[24] A 1973 study had suggested that personnel with long service who occupied top management positions in ENGCOM be encouraged to retire or to seek positions in the United States.[25] The old-timers had experience in dealing with the unique problems of overseas construction, and many were fluent in German and other European languages; but they were entrenched in positions and at salaries that blocked new employees.

The first major personnel change came quickly. In the summer of 1974, John Tambornino, chief of engineering since 1956, decided to retire on 30 November. OCE drew up the list of candidates for his position and included no one with experience working in Europe. Ralph Wheeler, assistant to the chief of construction at OCE, Frederick McNeely, emerged as the leading candidate; and General Donovan appointed him as chief of engineering. Other people from the Corps of Engineers subsequently filled top vacancies in Frankfurt; the lists that OCE prepared seldom included EUD staff or persons with experience in Europe.[26] OCE's priority was placed on familiarity with Corps procedures.[27] Washington recruited employees from Corps districts and divisions in the United States to help institute the "Corps system" in Europe, and in the first several months forty-one persons took temporary duty assignments of ninety or more days in EUD.

The newcomers to Europe received no briefing or orientation before they arrived.[28] The incoming chief of the Office of Administrative Services, R. L. Rousseau, described the situation in Frankfurt as "chaotic."[29] Jim Wise, who later returned to a permanent position in EUD, recalled that "there were a lot of people in a very limited space.... They were sitting out in hallways; where they were inside offices, you could barely walk between the desks."[30] Notwithstanding the confusion, many who came

General Prentiss (left) *with John Tambornino in November 1974*

from the United States described their experience in the new organization as "exciting."[31]

Those who had been working in Europe viewed the transition period differently.[32] American civilians who had been recruited for work in Europe by the Corps in the 1950s and 1960s thought that they had always been a part of the Corps of Engineers "family." William E. Camblor, who had served as director of the U.S. Army Construction Agency, Germany (USACAG), beginning in 1956, drew attention to this attitude during a 1961 inspection tour by the visiting chief of engineers. Camblor explained that he had organized USACAG "along the basic lines of a normal state-side Corps of Engineers district."[33] The attitude of the newcomers distressed the old-timers, who felt their professional competency and their patriotism were being challenged. The choice of Wheeler—rather than someone already in Europe—to succeed Tambornino increased suspicions that Tambornino had been targeted for removal.[34]

Most of the several thousand Germans who had worked for the Engineer Command had served in facilities engineering. Those who joined the Europe Division worked in military communities, where they provided the new organization with valuable continuity in managing projects and in estimating, indirect contracting, real estate, NATO recoupment, and legal affairs. The attitudes of the newcomers also distressed these employees: "They said, this is not the way the Corps does it. They didn't pay any attention to the fact that they are not in the States, [that] we are working under entirely different rules and conditions."[35]

The newcomers had little knowledge of indirect contracting, little regard for the experience and knowledge of the old-timers, and little disposition to learn from their new colleagues. Almost two decades after the activation of the division, long-term employees spoke of the 1974 transition as "traumatic" and "horrible." The adversarial atmosphere remained one of the strongest memories of the period.[36]

Division leaders soon realized that they did not have adequate staffing for their mission. General Prentiss thought that OCE had failed to take into account the difficulties of doing business in Europe, where staff had to observe both American and European design criteria. Also, indirect contracting required project managers to coordinate with layers of host-government agencies, and the language differences made translators and interpreters essential. These factors made EUD's work more labor intensive than managing construction in the United States. The division pressed its recruiting effort to fill vacant positions with permanent employees. By March 1975 EUD's staff had increased from the 280 who transferred from ENGCOM to just over 400. By the end of the year the staff numbered almost 500.[37]

In September 1975 the chief of engineers, General Gribble, told Prentiss to expect "some reduction in military spaces" in fiscal year 1976 because of ceilings that Congress had placed on the military. Prentiss protested that EUD needed more employees.[38] A manpower survey conducted in mid-October confirmed that the division's workload justified nearly 600 employees, but Gribble informed Prentiss that the staff would remain below 500 for the foreseeable future. OCE suggested the continued use of personnel on temporary duty.[39]

In addition to the shortage of personnel, Prentiss had to deal with the growing concern in OCE over the position of women and minorities in the Corps. The command inspection team visiting EUD in September 1975 advised the division to create an equal employment opportunity (EEO) function and a race relations program. Prentiss had begun to implement such programs, but he had so few people that he chose to staff the EEO position only part time. Because USAREUR's Civilian Personnel Office in Frankfurt served EUD, the division prepared only a supplement to the USAREUR Equal Employment Opportunity Action Plan.[40]

Prentiss began to make personnel changes. As he came to realize the importance of establishing and maintaining good relationships with international leaders, Prentiss involved William Camblor more extensively, especially in contracting. Commensurate with Camblor's rank (GS–15), his experience, and his skills as a negotiator, Prentiss changed his title from "assistant to" the division engineer to "assistant division engineer for intergovernmental affairs."[41] After appointing the comptroller, Colonel Buxton, as area engineer for the Frankfurt Area Office, Prentiss promoted Buxton's deputy, Randolph S. Washington, to the position of comptroller. Prentiss believed that this promotion made Washington the only African American civilian managing an administrative division in the Corps of Engineers.[42] Another African American

civilian, Jacques Bouchereau, served as deputy chief of the Construction Division.

Prentiss was not satisfied with the chief of construction, H. Jace Greene. Greene had served in Frankfurt since the beginning of USACAG, and his involvement in military construction in Europe went back to 1946. Prentiss asked his deputy, Colonel Townsley, to monitor Greene's performance; Greene found this supervision insulting, and a contest of wills continued for months. In November 1976, after an extended medical leave, Greene retired. By that time both Prentiss and Townsley had left the division, leaving it to the next commander to select a new chief of construction.[43]

Adjustments in the Comptroller's Office

When the command inspection team submitted its report, it acknowledged that "the transition from the administrative and command procedures of Engineer Command to those of the Corps of Engineers" created major problems for the Europe Division. These difficulties were compounded by the "shortage of experienced personnel in the administrative activities." As a result, the team concluded, "full and effective support of the operational mission" was lacking.[44] Harmonizing practices in the new Comptroller's Office presented special challenges for the Europe Division. The dissolution of ENGCOM had shifted employees who had little accounting experience into the Finance and Accounting Branch. Turnover among staff in the basic clerical positions was exceedingly high—at times over 100 percent a year—which made it especially difficult to maintain continuity, to train, or simply to get the work done.[45] Several key positions in the Comptroller's Office—chiefs of finance and accounting, budget and programs, and cost accounting—remained vacant for several months.[46]

OCE sent people on temporary assignments from other Corps offices to work with EUD staff while recruitment continued. They were not prepared for the complexity of tracking costs of projects in seven countries and seven currencies, each at varying rates of exchange for the dollar. Furthermore, each project might use funds from a mix of two or more sources or appropriations.

In EUD all posting was done by hand. Comptroller Washington and the deputy division engineer, Colonel Townsley, had expanded the standard five-column account sheet used in the United States to fourteen columns. The additional columns allowed them to monitor fluctuations of the exchange rate between the day EUD awarded a contract and the actual payment for work, delays arising from the indirect system of contracting through host-nation agencies, and a half-dozen other variables that stateside offices never had to worry about. One of those variables—inflation—compounded the comptroller's headaches: In 1975 inflation amounted to 20 percent on dollar purchases and 7 percent on purchases in Deutschmarks, the worst rates in over twenty years.[47]

OCE's plan to implement the Corps of Engineers Management Information System (COEMIS) encountered serious problems. Overall,

COEMIS was ill suited to the European environment: It could neither handle multiple currencies nor maintain the personnel records of a labor force that included German employees, DACs, and locally hired dependents. EUD's computers, installed in 1974, turned out to be incompatible with COEMIS.

The command inspection team that visited EUD in August 1975 did not appreciate the ingenuity of the system that Washington and Townsley had cobbled together. They saw only that the system was complex and unwieldy, the general ledger frequently did not correspond with subsidiary records, and the records proliferated in "distressing" ways.[48] Townsley and Washington cooperated with the Comptroller's Office at OCE to reconcile the two systems and to recruit new employees, but progress in the Comptroller's Office was painfully slow. Incompatibilities between COEMIS and EUD's needs took many years to resolve.[49]

In-House Design

Tensions arising from the clash of old and new personnel and procedures were exacerbated by the OCE decision to establish an in-house design capability to EUD. None of the Europe Division's predecessor organizations had maintained such a capability, although stateside Corps districts generally accomplished from 25 to 50 percent of their design in-house. This practice helped maintain the technical proficiency of engineer personnel and saved money. Thinking to apply the same logic to Europe, the transition team wrote a design branch into the Engineering Division in EUD's organization chart.[50]

When Ralph Wheeler arrived in Frankfurt as the chief of the Engineering Division in the autumn of 1974, he intended to develop a Design Branch capable of handling about a quarter of the division's design requirements. He expected the remaining 75 percent of the work to be passed to architect-engineer firms either under direct contract to EUD or as indirect contracts through a host-government agency.[51] Wheeler received approval from OCE for an authorized strength of more than eighty people for the Design Branch and began recruiting when notified of his appointment as chief of engineering. By the time he arrived in Frankfurt, more than twenty people from all over the United States were committed to the Design Branch.[52]

Wheeler was conscientious and enthusiastic, but neither he nor his recruits understood the international agreements and conventions that governed indirect contracting and limited the division's ability to do design work in-house. Neither were they equipped to prepare design documents in metric measurements and in both English and the language of the host country.[53]

Wheeler also failed to appreciate that the Europeans took a radically different approach developing a design package from Americans. As a result, his arriving personnel would have to learn a totally new system of preparing contract specifications. American design engineers put every-

thing that the design demands on the drawings (plans) for the project. Specifications then define how or according to what standards various jobs are to be accomplished, for example, how to mix the concrete, prepare a surface before painting, and lay roofing. Construction contractors, working from the drawings, determined the scope of services, quantities of materials, and type of equipment needed to complete the work. Then they submitted a bid based on their own calculations.[54]

Specifications in the German design package had to contain a detailed list of the materials and services required by the project. American engineers expected the contractors to generate their own list. For standards on the quality of work—the "how to" set out in American specifications—Germans turned to the *Deutsche Industrie-Normen* (*DIN*). The Germans had a *DIN* on roofing, a *DIN* on painting, and a *DIN* on structural steel, and so on, each of which tells how to do specific tasks in every phase of construction.[55]

The German specifications became an expanded bill of materials so that all bidders started with the same definition of how much work was to be done. This approach placed the responsibility and the risk on the designer rather than on the contractor. Europeans "didn't want construction firms going broke because somebody had underestimated the job."[56] The American approach placed greater responsibility and risk on the construction contractor. He had to calculate how much material to purchase and risk losses if his estimates were wrong. Joe G. Higgs, who succeeded Wheeler as chief of engineering at EUD, explained: "In the United States you look at the plans and then you read the specs. In Germany they read the specs, and they don't even look at the plans until they start construction.... In Germany, if it is not in the specs, it doesn't count."[57]

Wheeler put a tremendous amount of personal effort into making in-house design succeed, but there were too many obstacles. The learning curve for the new staff was steep, and the backlog of design increased. In-house design never exceeded 11 percent of the workload of the Engineering Division and averaged below 5 percent.[58] Wheeler had compounded the problems when he put almost twenty of the long-time employees who could have helped the new design engineers—they had experience with the *DIN*, metrics, and local materials—into a Technical Review Branch.[59] After less than two years he recombined the Design Branch and the Technical Review Branch into a technical engineering branch headed by Lou Brettschneider, the engineer who had served as chief of that branch after Saul Fraint retired in 1973.[60]

Support for Facilities Engineers

The April 1974 agreement signed by the chief of engineers and the commander in chief of USAREUR provided that the new Corps organization would "furnish engineering design and construction services to the regional commanders ... as requested," and referred specifically to "OMA [Operations and Maintenance, Army] and minor military design and con-

struction projects," which EUD was to execute "on a reimbursable basis." Although USAREUR expected this support for the facilities engineers, it could offer EUD no staff positions to cover the work.[61]

In the inactivation of the Engineer Command and the establishment of the Europe Division, the regional corps commanders assumed the function for installation support. The transfer of responsibilities did not go smoothly, and relations between the EUD staff and facilities engineers were not cordial. No one had a very clear idea which new tasks or projects would go to the regional Directorates of Facilities Engineering and which would go to EUD. People at EUD doing work very similar to the work done in facilities engineering positions had been given higher grades and salaries. The facilities engineering personnel in the regions saw no reason to channel new work to Frankfurt.[62]

The division's first challenge was to complete projects left unfinished. Brettschneider recalled that ENGCOM's Facilities Directorate had a large number of projects under way in 1974, and the departing staff "dumped cartons into Mr. Tambornino's office.... It took months and months of tremendous effort to clear the decks."[63] To complete design work on these projects, the division turned to stateside districts for help and intensified recruiting for additional personnel.[64]

General Prentiss placed a high priority on establishing good relations between EUD and the facilities engineering organizations. He did not want to be criticized, as ENGCOM commanders had been, for failing to provide adequate engineering support to the military communities. In early October 1974 he met with the regional directors of facilities engineering for V Corps, VII Corps, and the 1st Support Brigade to outline EUD's capabilities and to offer assistance with architect-engineer contracts and with the supervision of construction and design.[65] From his experience in Stuttgart, he thought that facilities engineers in the communities needed EUD's technical expertise and help in managing contracts. He also knew that the facilities engineering workforce had little capability for even minor new construction or inspection.[66]

Prentiss and Wheeler told the commanders that EUD would help them with their operations and maintenance program.[67] Division personnel met monthly with facilities engineers. The three directors of facilities engineering began asking the division to assist with design and supervise construction. Project funding came from family housing maintenance, nonappropriated funds, and OMA budgets.[68]

EUD also devised a new way to obligate year-end OMA funds that might otherwise have reverted to the U.S. Treasury. The procedure involved encumbering funds by using reimbursable orders—a form of purchase order between government agencies—for work to be done in the next fiscal year. Once obligated, the funds were carried over into the next fiscal year to finance work in progress.[69]

Prentiss and Wheeler's efforts succeeded almost too well: The workload increased rapidly. In April 1975 Wheeler created the Facilities Engineering Support Section to handle the influx of work. Headed by

Tom Conner, the section began with just three project manager positions; by June the regional Directorates of Facilities Engineering had given them 300 projects with a value of $47 million. By August they had more than 450 projects with a total value of $54 million; some single projects were as low as $1,700. The section grew to six people, and by the end of 1976 the number of projects had more than tripled.[70]

A severe backlog of design work developed in the Engineering Division and attracted the attention of OCE's Directorate of Military Construction. OCE warned the division against taking on "too much work" in facilities engineering. The command inspection team that visited the Europe Division in August 1975 recommended that USAREUR be "requested to provide adequate manpower spaces to EUD to undertake the work [for facilities engineering]."[71] To General Prentiss, this advice exemplified OCE's lack of understanding of the division's mission. He sent the director of military construction, Maj. Gen. Bates C. Burnell, a copy of the USAREUR agreement with pertinent passages underlined. Calling USAREUR's requests for engineering services "legitimate," Prentiss questioned whether the people in OCE had read the agreement.[72]

Work for the facilities engineers remained an important part of EUD's operation and a concern for each successive commander. Army auditors ruled that the division's device of obligating the year-end money through special purchase orders violated government regulations, but the division developed other instruments such as open-ended contracts that allowed the communities to group small jobs into larger bid packages. The division also established guidelines that eliminated the very small contracts. Both of these steps eased some of the pressure on the Engineering Division.[73]

Assessing the First Two Years

In May 1976 General Prentiss moved to the position of deputy chief of staff, engineer, in USAREUR.[74] In his final letter to the chief of engineers from Frankfurt, Prentiss boldly addressed his difficulties with OCE. He protested against "those on your staff with great authority and no responsibility," against inspection teams who arrived in Frankfurt with "an obvious bias," and against the lack of information in headquarters about "indirect contracting and about our support agreement with USAREUR." He called OCE's control of referral lists for staff openings a "major irritant" and cited his search for a new chief of construction. The list he received included "only three names that I recognized, two OCE long-timers and another former OCE member who refused my offer of a job a year ago." He was "amazed" to find neither of the two names he had recommended on the list. Prentiss had registered these complaints months earlier in correspondence with OCE, and many of his successors echoed them.[75]

For all the problems, Prentiss had a sense that the division had made progress. Although there were many procedures and administrative guidelines to be worked out, he felt that EUD's energetic support of facilities engineers at the community and regional levels and its acceptance of

expanding responsibilities in the Mediterranean had earned the organization credibility throughout the Army.[76]

The assessment Prentiss presented to his own staff was more critical than that in his report to OCE. In one of his last staff meetings he pointed four administrative shortcomings: missed deadlines, failure to supply interim responses alerting customers to delays, poorly written correspondence, and failure to record policy decisions. He commented on the tendency to conceal problems so as to avoid criticism and urged just the opposite, that civilian employees bring problems into the open for discussion.[77] Two years after its activation, the division had dissatisfied people and sloppy procedures.

Change of Command

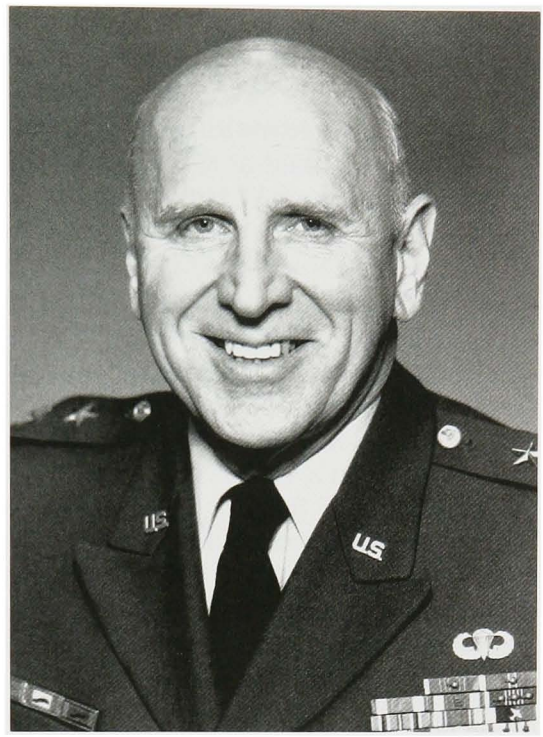
General Delbridge arrived at the division a few days after General Prentiss moved to Heidelberg. At the end of the war Delbridge, just eighteen, had enlisted in the Army and had gone from the ranks to Officers' Candidate School. As a young lieutenant he supervised airfield construction in Berlin from 1947 to 1949. He then won an appointment to the U.S. Military Academy, where he graduated in 1953. Delbridge served three years (1958–1961) with the U.S. Engineer Group in Turkey. In 1975–1976, just before taking over at EUD, he had commanded the Support Command of the 3d Armored Division in Frankfurt.

Delbridge was gregarious, and he wanted to create an atmosphere at EUD in which the staff would feel they were part of a large family and share in "the closeness and professionalism" associated with the Corps.[78] From his first days at the division, however, he was troubled by the cliquishness among the staff and the absence of cordiality toward him and his family. Delbridge concluded that there was something "desperately wrong."[79]

The new commander began to work on staff morale immediately. During a command inspection, Delbridge asked for pictures he could use for a briefing, emphasizing that he wanted photos not only of construction projects, but also of division personnel at work: "secretaries typing, inspectors inspecting, supervisors supervising, reviewers reviewing."[80] He also went "shopping" for a full-time public affairs officer, someone to take responsibility for the internal issues of staff morale and cohesiveness as well as the public image of the division. He remembered a young woman from the San Francisco District who had given "a magnificent presentation ... full of fire and humor." Early in the summer of 1976 Delbridge contacted Shirley Kappa, and she agreed to come to Europe.[81]

Kappa took over editorship of the division's newsletter and put it on a monthly publication schedule. She filled it with news about staff members and division activities. The newsletter featured pictures of both military and civilian employees, with prominent attention to German employees. Initially, the publication used the title *EUD Bulletin*, but Kappa asked for suggestions for a more imaginative name. The July 1977 issue featured the

new masthead—a woodcut print of ten hard-hatted men linked shoulder to shoulder, each with one very large shod foot kicked high in the air. (*Figure 3*) Across the soles of the shoes appeared the letters "c-o-r-p-s-'-l-i-n-e."[82]



General Delbridge

Kappa also organized "Kastle Keepers," a group of American and German staff members who planned activities for employees and their families, including ski trips, holiday parties, sports teams, and "Meet and Mingle" afternoon get-togethers. To welcome new employees, Kappa put together a photo brochure on the division and set up a program matching an employee "sponsor" with each new employee. She promoted the idea of business cards for staff and had them printed. Delbridge believed that Kappa's "little things" helped to foster an identity for EUD and to improve staff morale.[83] Her energy and enthusiasm mirrored Delbridge's style of management: His deputy, Col. Carlyle "Chuck" Charles, said, "I don't think there was a person he didn't know by first name—and what they did."[84]

The Projects Board

Delbridge wanted people at EUD to see themselves as part of a team, to look beyond their particular jobs, and to develop a sense of the entire organization. In his first meeting with the staff, on 25 May 1976, he described this philosophy and quoted the renowned English physicist

Figure 3: New Masthead of the Europe Division Newsletter

and novelist C. P. Snow: "Judgment is the ability to look at many things at once in their interdependence, their related importance, and their consequences." In his first weeks at the division, Delbridge found that "too many people were making judgments by looking down a straw."[85]

When he looked at the EUD workload, he found that the staff was not able to report on all of the active projects and contracts. He concluded that the division needed a tracking and reporting system to monitor expenditures and keep work on schedule. Such a system could also encourage everyone to take a broad view of the work and activities. Delbridge asked each division to prepare reports for staff meetings. He also asked them to devise a method to "permit monthly review of 'key' projects ... [to be conducted] as part of a monthly review by the entire EUD staff in the new conference room, which will be designed to present the total workload of this division in a visible manner."[86]

"The board" became a fixture of Delbridge's tenure. Three walls of the conference room were hung with large magnet-sensitive display boards; each of the nearly 1,400 projects under contract within EUD was listed on a separate magnetic card about ten inches wide. The cards contained the pertinent information for the project, including project manager, contractor, amount spent, and current status; they were arranged on the boards by funding source, and they could be updated in grease pen. Delbridge made the "board review" a monthly event, and just before the review the comptroller put a red flag next to any project on which reports showed overspending or deviation from the schedule.[87]

The review sessions were detailed and time-consuming, because Delbridge asked the project managers to report on every project. When Delbridge judged an explanation inadequate, he bore down hard and demanded answers. John Lewis, who had arrived from the Huntsville Division on 1 September 1976 to succeed Greene as chief of construction, managed about 250 projects in his division and acquitted himself well. Ralph Wheeler's task was much more difficult: The Engineering Division had to track more than 1,000 projects. Preparing for board reviews took hours of work, and the reviews could last all day. Heated exchanges among the participants were frequent, and the whole exercise was very controversial. Some staff found the demands of accountability personally exhilarating and invigorating for the organization. Others resisted, complained that they were drowning in detail, and labeled Delbridge a micromanager.

Few people in the division understood the board review as a device. Delbridge wanted to jolt people into seeing the various individual projects "in their interdependence, their related importance, and their consequences." Despite the staff time required to keep the board updated, Delbridge thought that on balance the board succeeded. Several people who worked with him agreed: Lt. Col. Roy Brown, Northern Area engineer, described the period as "a most dynamic time," in which the organization improved because Delbridge put "many people's feet to the fire." The division counsel, Allan B. Aaron, observed that Delbridge "pushed us to do things we

probably didn't think we could do in the time frames that were demanded, but we managed because our commander pushed us." Delbridge's deputy, Colonel Charles, said "the esprit de corps was super in the organization unless you were a slackard [*sic*].... It was probably a high point of my career to see an outfit work like we were doing."[88]

From the monthly reviews, evidence mounted that the Engineering Division could not handle the increasing design workload. The review of 24 January 1977 revealed that 70 percent of the projects in the division were behind schedule; the prediction for February was 80 percent slippage. Delbridge exploded! Although he acknowledged that the Engineering Division was understaffed, he held the chief of engineering, Wheeler, personally accountable for the delays.[89]

Addressing Personnel Shortages

Division and branch chiefs reported to Delbridge the same personnel shortages about which Prentiss had complained. The new commander quickly concluded that the shortages hurt EUD's ability to accomplish its mission.[90] To address the problem, Delbridge took two courses of action. First, to make the division more attractive to potential employees, he requested both an increase in authorized positions and an increase in the average grade structure. Second, he ordered internal reviews to evaluate how EUD was using people. Completed in October 1976 and January 1977, these studies showed that if the division carried its locally hired dependents as temporary rather than permanent full-time staff, as many as thirty-five additional spaces could be regained and filled with DACs. Although most of the dependents worked in clerical and secretarial positions, the recovered spaces could be set at a higher level, making it possible for the division to recruit additional professional staff. Delbridge directed that the spaces be reallocated internally to the Engineering Division, particularly for project management.[91]

Delbridge ran into trouble when OCE reviewed his requests for an increase in authorized strength. In a visit to Frankfurt in March 1977, the chiefs of engineering and construction, Lee Garrett and Fred McNeely, respectively, challenged the purported needs and EUD's recruiting ability, noting that the division had not filled all its authorized positions. They proposed that EUD use stateside districts to do more of its design work and that the division contract out other work. They also questioned the "alleged" need to use indirect contracting for design. Overall, they seemed unsympathetic to EUD's problems; OCE turned down Delbridge's request.[92]

Delbridge won modest support from the chief of engineers, Lt. Gen. John W. Morris, when the two met at NATO headquarters in Brussels in May 1977. Delbridge returned to Frankfurt with assurances from Morris of limited increases in the authorization for senior-level civilian positions, an increase of thirty-two positions in overall professional strength (seven military and twenty-five DACs), and an increase in the average grade, all

to be added to the authorization for fiscal year 1978. The new authorization was less than the forty-five positions Delbridge had requested, but it was a start.[93]

The new spaces, plus the spaces recovered by internal reallocation and openings created by normal attrition or rotation, allowed Delbridge to bring in more people with Corps experience. In the summer of 1977 Delbridge had to select a new chief of construction to replace John Lewis, who accepted a comparable position with the new Middle East Division in Saudi Arabia. McNeely at OCE did the recruitment and preliminary selection for this position. His choice, Jose Cruz, had twenty-five years of experience in the Corps of Engineers, most recently as assistant chief of construction in the Fort Worth District, but had never worked in Europe. Cruz started work in Frankfurt in September 1977, allowing a brief overlap with Lewis, who remained with EUD until early October.[94]

In this same period General Delbridge decided not to renew Wheeler's three-year contract as chief of engineering. After a national search during which he returned to the United States to interview candidates, Delbridge selected Joe G. Higgs, chief of engineering in the Savannah District. During his career with the Corps of Engineers since 1954, Higgs had worked in the Huntsville Division and Mobile District but had not worked overseas. Higgs and his family arrived in Europe late in February 1978.[95]

The decision to replace Wheeler, the selection of Higgs, and the battle over authorized positions took place while Delbridge struggled with a delicate issue involving the personal links among his superiors in the chain of command. Delbridge's predecessor, General Prentiss, had joined a close-knit team of engineer officers serving under USAREUR commander, General George S. Blanchard. Lt. Gen. Kenneth B. Cooper, deputy commander in chief, had graduated from the U.S. Military Academy with Blanchard in 1944. The chief of staff, Maj. Gen. Richard H. Groves, class of 1945, was Prentiss's immediate superior. General Burnell, also class of 1945, served as director of military construction in OCE. Burnell initiated an exchange of letters with Prentiss, and in early 1977 Prentiss reinstituted "the practice of informally updating" the chief of engineers each quarter on the engineer activities of USAREUR.[96]

From his arrival at EUD in May 1976 to the end of 1977, Delbridge exchanged letters with Prentiss and Burnell about the policy directions EUD should pursue. As the junior officer, Delbridge felt uneasy. Support for him at OCE seemed equivocal—the response to his removal of Wheeler and his selection of Higgs being examples—and he thought, as Prentiss had, that the senior civilians in Washington were undercutting him. Some at EUD, including Delbridge, thought that he might be relieved as commander.[97]

Delbridge's concerns increased when in September 1977 Prentiss gave Burnell a series of "suggestions" for revising EUD procedures, particularly urging that the division turn more work over to host nations under the indirect contracting system. Delbridge prepared a lengthy reply. He

reiterated the division's challenge of "executing an extremely large program with a disproportionately small staff"; but he concluded that "the Corps and its European customers would best be served by retaining present EUD flexibility which allows us to go either directly to industry, indirectly to the host nation, or to any CONUS [Continental United States] district for services."[98]

Delbridge's defense reached a new team of military leaders at OCE. Brig. Gen. Richard M. Connell had replaced Burnell as director of military construction, and Maj. Gen. Ernest Graves, deputy chief of engineers from July 1977 to March 1978, emerged as a supporter. Graves helped to resolve the impasse over manpower, and he shored up Delbridge's authority to make decisions for EUD.

General Graves was particularly well prepared to judge whether the Europe Division needed the workforce that Delbridge had been requesting. In 1970, while serving as deputy director of military construction, he had devised a formula for calculating the appropriate ratio of employees to any given level of work in military construction.[99] In December 1977 Graves, accompanied by Garrett and McNeely, made the first of two visits to Frankfurt to discuss the division's personnel issues. About two-thirds of the way through Delbridge's briefing, "Graves slammed his hand down on the desk—scared everybody to death—and said, 'Dammit! You needed 100 people six months ago!'" Delbridge's initial reaction was anger, but then he realized, "[Graves] wasn't talking to me, he was talking to the guys on either side of him."[100] Graves told Delbridge to have his staff prepare a detailed statement of the division's manpower requirements.

In March 1978 Graves returned to EUD with Garrett and McNeely to review the manpower requests. Higgs, who had recently arrived to head the Engineering Division, took Garrett and McNeely aside and asked them to "leave us alone. Give us a chance ... give me time to work." Within weeks EUD received authorization to recruit 120 new employees, and in the ensuing months the frequency of visits from OCE declined.[101]

His confidence bolstered, Delbridge launched a broad recruitment campaign to fill the new positions. In May 1978 the division sent a five-person recruiting team, headed by Shirley Kappa, to the United States. Team members visited Washington, Baltimore, Kansas City, New Orleans, Sacramento, Portland, and Seattle. They gathered several hundred applications from Corps employees, and more than 70 percent of those who received offers accepted. This success was especially satisfying because Garrett and McNeely had predicted that fewer than half the people offered positions would actually accept. With the new positions, routine departures at the end of contracts, and an authorized "overhire" of 70 DACs, EUD added about 120 new employees in the summer and autumn of 1978. In the division's initial year, 1974, its staff numbered 280. That increased to 589 by October 1976, five months after Delbridge had taken command. In the fiscal year ending October 1977, staff size increased by less than 5 percent, but the rate of expansion tripled in Delbridge's final year, bringing the total to about 700 by October.[102]

Visiting TUSEG

During his tour as commander of EUD, General Delbridge took special pleasure in returning to Turkey, where an old acquaintance, Herb Wooten, represented U.S. Army engineer interests.[103] After mustering out of his all–African American unit at the end of World War II, Wooten had stayed in Paris to indulge his love of classical music. He had held various government positions in Europe before joining The United States Engineer Group (TUSEG) in Turkey in 1955.[104] Wooten had remained in Ankara through many organizational changes. When the Mediterranean Division was inactivated and TUSEG transferred to the Europe Division in 1976, Wooten used his contacts in the government of Turkey and with the Turkish General Staff to the advantage of EUD. He had also traveled to Frankfurt to help plan EUD's takeover of responsibilities and had worked at the area office in Italy to arrange the final transfer of equipment and vehicles from the Mediterranean Division.[105]

As a captain in Turkey in the early 1960s, Delbridge had known Wooten as a GS–5 office manager. By 1977 Wooten had hardly advanced in grade, but the general saw immediately the advantages that his longevity brought to EUD.

> When I landed in Turkey Herb came out on the tarmac to meet me and had a retinue of people and a car.... About 50 yards away was an airliner that had landed with several Air Force generals.... They were all standing in line going through customs and getting the traditional hard time.... We just bypassed it all! When [Wooten] flashed his ID cards, they were all the ID cards we had in the '50s.... They all thought he was a spook, a CIA guy.... And since he knew so much about the area, the ambassador would call him in on occasion, which again added to the mystery and mystique of Herb Wooten.[106]

Although U.S. military construction in Turkey declined in the aftermath of the Cyprus dispute, Wooten remained in Ankara even after Delbridge left EUD. When work picked up again in 1979, he helped reopen the TUSEG office.[107]

During the second year of General Delbridge's tenure EUD achieved a degree of stability. New procedures were helping incoming employees adjust to life in Europe, and increased social activities improved staff morale. Much of the tension between the newcomers and the old-timers had dissipated. Joe Higgs and Jose Cruz, the new chiefs of engineering and construction, appeared to be getting the workload under control. Their cooperation helped to dispel friction between their divisions and get staff members to work together to review projects, thereby reducing the late modifications to contracts.[108]

Whereas General Prentiss had spent his eighteen-month tour as division engineer struggling to put the new organization into operation, General Delbridge had sought to gain control of the workload, establish

regular procedures, and improve morale. Their efforts brought results. By 1978 Delbridge began to feel that EUD had become a "hard-charging organization" made up of enthusiastic people who enjoyed working together. His gregariousness put some people off but engaged others and, in their view, changed the atmosphere dramatically. Though the review board was onerous, it helped establish more effective project management and control of funds.[109] By the summer of 1978 EUD had moved through its transition period.

8

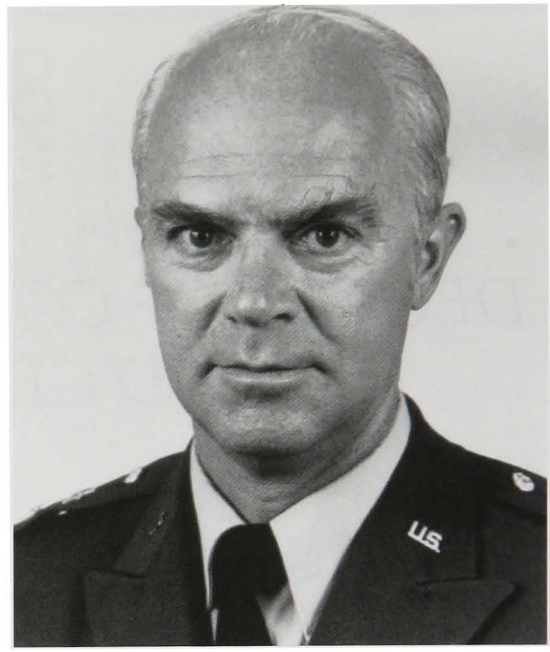
DECADE OF CONSOLIDATION AND GROWTH

It took only the stroke of a pen in 1974 to establish the United States Army Engineer Division, Europe (Europe Division or EUD) of the Corps of Engineers, but almost four years—until 1978—to develop a cohesive organization. Brig. Gen. Norman G. Delbridge, Jr., who succeeded Brig. Gen. Louis W. Prentiss, Jr., as commander of the Europe Division, felt that he had overcome the tensions that characterized the transition to management of military construction in Europe by the Corps of Engineers. Taking leave of EUD in July 1978, Delbridge observed: "The last two years have been a challenging period; challenges will continue, but ... flowers are now ready to bloom. We have procedures, more people on the way ... [a] closer and warmer relationship between everyone here in EUD."[1]

From the base that Prentiss and Delbridge had established, their immediate successors concentrated on the challenges facing a growing but fundamentally stable organization. In the five years after Delbridge's departure, two commanders (Brig. Gens. Drake Wilson and George K. Withers, Jr.) strove to adjust the division's personnel allotment to fit its workload, to balance its management responsibilities, and to address and meet the needs of the division's customers. All of the division commanders' management decisions had to be made in light of changes in the North Atlantic Treaty Organization's (NATO) strategic thinking, shifts in the European political order, and new U.S. military weapons.

After five years of relative stability in leadership, in fewer than thirty months between June 1983 and the autumn of 1985, three brigadier generals—Scott Beecher Smith, James W. van Loben Sels, and James W. Ray—commanded the division in swift succession. The rapid turnover of leaders and their varying styles of management challenged division personnel. This period of turmoil coincided with a marked expansion of workload in the 1980s, which in turn prompted a tightening of management control. By 1986 balance had returned once again, and the division enjoyed a few years of stability and a sense of confidence in their future as the end of the decade approached.

Delbridge's successor, Brig. Gen. Drake Wilson, arrived on 15 August 1978 to assume command of the Europe Division. Before this assignment Wilson had served as deputy director of civil works at the Office of the Chief of Engineers (OCE) in Washington, but he was no stranger to Frankfurt. As an Army dependent, Wilson had lived in Germany and had graduated from the Department of Defense's Frankfurt High School in 1947. He attended the U.S. Military Academy, graduated in 1952, and returned to Germany as a junior officer assigned to the United States Army Construction Agency, Germany (USACAG), from 1958 to 1961. Wilson also served with NATO's Central Army Group in 1970–1971 and in Stuttgart on the engineer staff of VII Corps from 1971 to 1973.[2]



General Wilson

In his first staff meeting at EUD, General Wilson emphasized his desire to be kept informed of issues and his intention to let people do their work without intervening. Wilson's subordinates described him as comparatively formal, straightforward, and decisive. They remember his two-year tour as a relatively quiet period despite the division's uneven workload.[3]

Balancing Manpower and Workload

Like Prentiss and Delbridge, Wilson confronted a personnel situation characterized by sharp fluctuations in the number of staff and in the volume of work. Unfortunately, staff size and workload frequently moved in opposite directions. Most American civilian employees signed contracts to work three years in Europe. Because of the time needed for processing in and out and for learning how the division functioned, only two years of a term proved to be fully productive. Frequent turnovers contributed to the ongoing need to recruit experienced Corps employees from the United States.[4]

The recruiting trip that Delbridge organized to the United States in May 1978 had been very effective. At the end of October, however, President Jimmy Carter announced a hiring freeze. Although the freeze was lifted at the end of January 1979, ceilings for new hires were set in line with the overall reduction in numbers for the Army. These ceilings

Europe Division workload included build-to-lease family housing projects for the Hanau community.

were below those anticipated when the hiring had taken place under Delbridge, and General Wilson had to manage the size of his staff and the workload within these new limits.[5]

Personnel Manipulation

Throughout 1978 Joe G. Higgs and Jose Cruz, EUD's chiefs of engineering and construction, respectively, worked to reduce the huge backlog of contracts that had accumulated during the division's initial years. By the spring of 1979, as the workload came under control, Wilson realized that EUD had too many people. As one way to reduce staff, Wilson told his managers to facilitate the return of willing U.S. civilian employees to the United States as they completed employment contracts.[6]

The departure of Americans caused German and third-country employees to worry about a possible reduction in personnel in the field offices. The matter caught the attention of EUD's Works Council, the body elected to represent local employees as authorized by USAREUR and the NATO Status of Forces Agreement (1963 supplement).[7] Hasso Damm, who had served since 1974 as the full-time chairman of the Works Council, noted that the increases in personnel at EUD between 1975 and 1979 were primarily in positions for Department of the Army civilians (DACs). Accordingly, he argued, the personnel cuts should come from this group and not disproportionately from the Germans and third-country nationals.[8]

After meeting with Damm, Wilson authorized a memorandum stating that the total number of local national employees would not be reduced, although geographic shifts of personnel might be made. On the broader issue of the proportion of these workers in the division's workforce, Damm obtained an oral commitment from General Wilson that reductions, when necessary, would be taken first and more heavily from the DAC roster of employees. This oral agreement, which Damm confirmed with each successive EUD commander, produced a core group of locally hired workers who provided continuity for the organization.[9] As a further gesture of support for the non-American workers, Wilson designated the chairmanship of the Works Council a full-time position, even though German law did not require a full-time chairman for a council representing fewer than 300 local national employees.[10]

During 1979 and 1980 the number of employees at EUD continued to fluctuate, even though the workload was increasing—an irony noted by Wilson. For most of fiscal year 1979 the division averaged 860 employees. Between January and June the division cut twenty-five positions as a result of Army-wide cutbacks.[11] More cuts were made in August 1979, and by 30 September EUD had reduced its staff to 707, the same level as before Delbridge's recruitment campaign in 1978. The number of employees increased to an average of 780 throughout most of fiscal year 1980 but dropped back at the end of the year to 690. The division operated in effect with one level of staffing throughout most of the fiscal year and then, to meet authorized levels, reduced its staff by releasing temporary employees and leaving positions unfilled. Once the division reported the staff numbers, the temporary positions could be refilled quickly.[12]

Wilson and his management team worked hard to build a strong core staff. In the spring of 1979 Wilson requested authorization from OCE for thirty-one new upper-grade positions (GS–13 to GS–17) to improve middle management and to enhance the level of technical proficiency in the division. OCE eventually approved fourteen positions, most of them in the Engineering Division, where Higgs tried to create a grade structure that would attract people from districts in the United States.[13] To provide more continuity and to reduce turnover, Wilson changed his earlier policy guideline and began actively encouraging American civilians to remain in Europe for up to five years.[14] Recruiting continued to be a major activity for the division.[15]

To promote efficiency and accountability, Wilson revised the roles of the two colonels serving as deputy division engineers by assigning each deputy a principal area of responsibility. He gave Air Force programs and special projects, particularly schools, to Col. Glen Smith. Col. Valentine Carrasco oversaw all work for the Army, which was the bulk of EUD's program. Wilson explained the arrangement by saying, "The heaviest dollar volume, Carrasco had; the most problems, Smith had." Both deputies and the commander had authority to sign contracts.[16]

Under Wilson's command William E. Camblor finally received the promotion that he had first sought while director of USACAG in 1959.

While assigned in USACAG as a junior officer, Wilson worked closely with Camblor and appreciated his administrative skills. Early in his tour at EUD, General Wilson requested approval to upgrade Camblor's position, assistant division engineer for intergovernmental affairs, to a GS–16. He then recommended Camblor for the position, and in 1980 Camblor was promoted to SES–4, a ranking in the Senior Executive Service equivalent to GS–16.[17] That promotion gave the organization two SES positions; Joe Higgs had been promoted in July 1979 when the Senior Executive Service was established.

Managing Resources

In October 1979 an OCE command inspection team suggested that EUD needed to rethink how it managed construction, particularly the structure of field offices that reported to the Construction Division. For several months the staff examined workload and flow of work at headquarters and in the area offices. The area offices had been established in 1974 as coordinating and reporting offices, while resident offices handled direct project oversight. The military officers and civilian staff in both the area and resident offices expressed frustration and dissatisfaction with the multiple levels of review that they faced and with the delays in getting decisions from headquarters.[18] To address these concerns, the chief of construction, Jose Cruz, established a task force led by Dwight Beranek, chief of the Construction Management Section. The reorganization recommended by the task force—intended to improve communications and to speed decision making within headquarters in Frankfurt—took effect at the beginning of the new fiscal year, 1 October 1980.[19]

Several measures implemented along with the reorganization were designed to respond specifically to the issues raised by field personnel. The Supervision and Inspection Branch was split into two sections, and the number of staff positions was increased to augment technical support to the field. Personnel were also added in office engineering to improve management of funds, troop construction, and accountability for real property. The Contract Administration Branch was reorganized into three sections, each handling projects for a specific geographic area. Construction managers were assigned to serve specific area offices rather than specific programs.

The field offices themselves underwent significant change. The division redefined the old Central, Southern, and Southwest Area Offices and closed the Mediterranean Area Office. The new area offices had larger workloads and a greater number of personnel. Several area offices took the name of the city in which they were located: Kaiserslautern, Frankfurt, Stuttgart, Nuremberg, and Würzburg. Only the Northern Area Office kept its name and location. (*See Map 16.*) The division set up resident offices in Vicenza, Italy; in Sigonella, Sicily; and in Athens, Greece, and retained The United States Engineer Group (TUSEG) Resident Office, which had been reestablished in 1979 in Incirlik, Turkey.[20] All area and

Map 16

resident offices reported directly to the Construction Division. The reorganization centralized legal services in headquarters, and lawyers Terry Trowbridge from the Mediterranean Area Office and Carl Korman from Stuttgart moved to Frankfurt.[21]

The permanent orders signed by General Wilson stated that changing the status of any unit to or from an area office or resident office would no longer require additional permanent orders. The basic field structure established in 1980 changed little during the following decade. As changes in workload dictated, the division closed the Sigonella office and upgraded Heidelberg and TUSEG to area offices. The new administrative arrangement allowed EUD to establish other resident offices and project offices as needed.[22]

Organization Headquarters

In 1979 General Wilson agreed to mandate a single form for the organization's name. Rather than continue the vacillation between the use of European Division and Europe Division, Wilson ordered that Europe Division be used consistently; it was the form that Headquarters, United States Army Corps of Engineers (USACE), in Washington preferred.[23] Because this decision required a new sign on the building and new letterhead, it seemed an appropriate moment to give the headquarters building a commemorative name.[24] The division counsel, Allan B. Aaron, proposed that the headquarters building be named in honor of Leonard L. Phillips, who had served with USACAG, Engineer Command (ENGCOM), and EUD between 1962 and his death in February 1976. Before serving with the Corps, Phillips had participated in the Nuremberg war crimes trials. In 1960 he joined the Corps of Engineers as a trial attorney while remaining an Army reserve officer. As general counsel for ENGCOM and division counsel for EUD, Phillips worked on legal issues surrounding the relocation of U.S. forces from France; helped negotiate the first construction agreement with the government of Belgium; drafted and negotiated the prototype Guarantee Rental Housing Agreement that became the United States Army, Europe (USAREUR), standard; and helped create the legal basis for implementing the Stem to Stern program.[25] Colleagues praised his precise legal mind, integrity and loyalty, wit, and reserved demeanor.[26]

Wilson supported the request to name the building after Phillips—a civilian—noting that more than 60 percent of the personnel working in the division were American civilians. At the annual awards ceremony on 11 July 1980, the headquarters building on the former I. G. Farben property in Frankfurt was officially named the Phillips Building.[27]

Addressing EUD Customers

In mid-September 1980 Wilson, by then promoted to major general, left EUD and returned to Washington. As of 16 June 1979, the Corps had a new status as an Army major command; its headquarters became U.S. Army Corps of Engineers. Wilson became director of military programs at the newly designated Headquarters, USACE (replacing the Office of the Chief of Engineers), and General Withers succeeded Wilson as commander of the Europe Division.

Phillips Building in the Mid-1980s

General Withers, a 1956 graduate of the U.S. Military Academy, served in Europe from 1974 to 1976 as commander of the 24th Engineer Group, predecessor to the 18th Engineer Brigade. Before being assigned to EUD, Withers served in the Department of the Army's Office of the Deputy Chief of Staff for Operations. He projected a quiet, reserved, and scholarly demeanor.

During his tour as commander of the 24th Engineer Group, Withers perceived a "general dislike of EUD among much of the U.S. Army in Europe." This attitude disturbed him, and he set out to develop a new climate. He particularly hoped to fulfill the needs of the commanders of V Corps, VII Corps, and 21st Support Command—who did not think they were getting enough support from the engineers in Frankfurt—and the Directorate of Engineering and Housing (DEH) in each of the military communities. His other management priority was to keep up with the greatly expanding military construction mission.[28]

The substantial growth in the defense budgets in the late 1970s created a burgeoning workload. New weapons systems and the improvement of facilities in Europe scheduled under these enlarged budgets increased the design and construction activity for EUD. To emphasize his commitment to better service for the communities, Withers raised the managerial level at which EUD handled this support. He created the position of assistant division engineer for DEH support and appointed Lt. Col. Robert Tames to the position in January 1981. Tames, who reported to the chief of engineering, Higgs, was expected to meet individually and frequently with

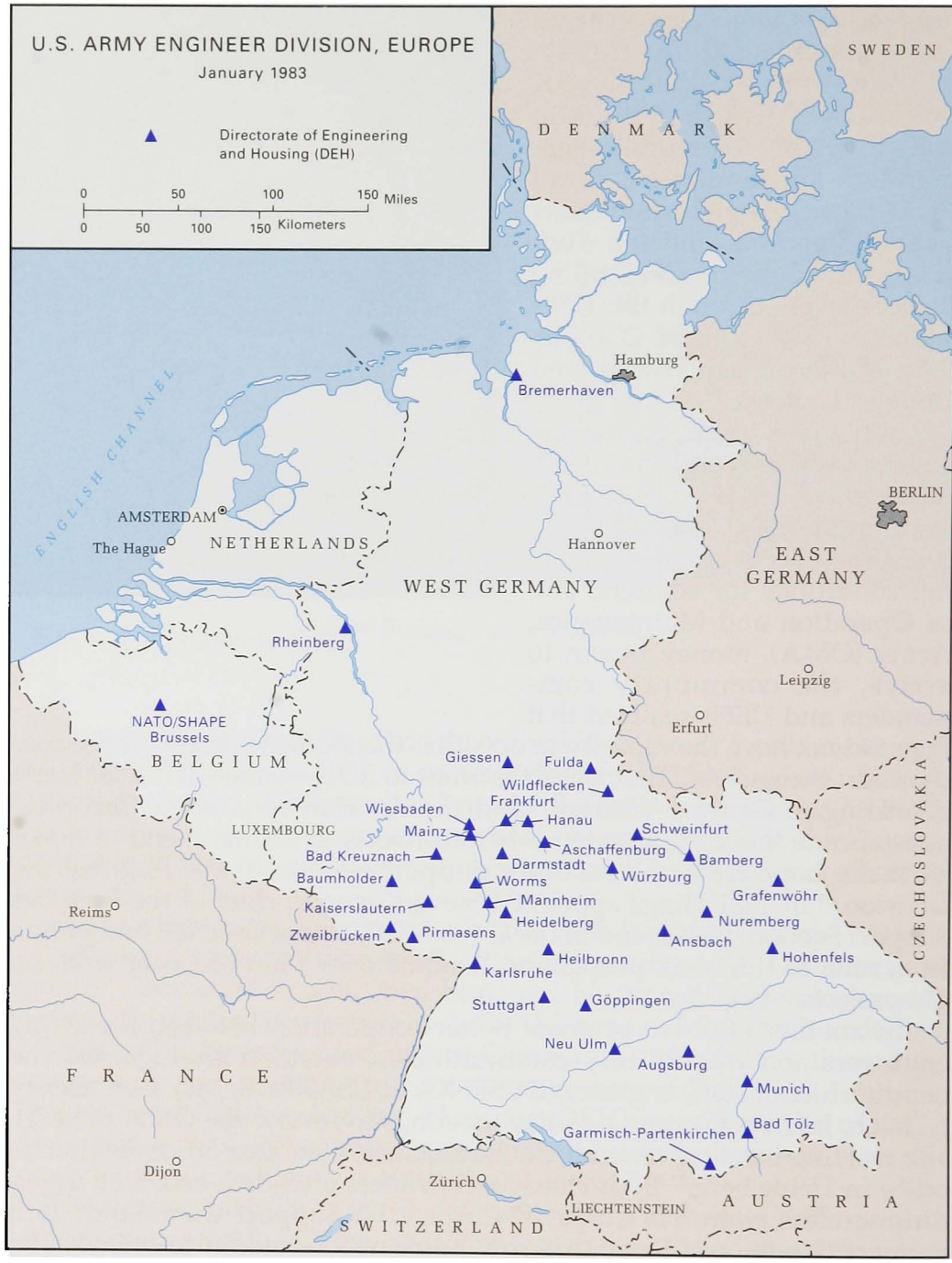
the facilities engineers in their communities. Under the concept of "one-stop installation support," Tames was the person in EUD to whom community commanders and engineers could turn for help. By all accounts this strategy worked, and the division retained the position, filling it successively through the 1980s with Lt. Cols. Robert O'Toole, John Moravec, Ray Powell, and Douglas Lamothe.[29]

General Withers

In his first weeks on the job, Tames visited every one of the more than thirty USAREUR communities. As Congress began to fund improvements in living conditions for soldiers, and as Operation and Maintenance, Army (OMA), money began to arrive, the community commanders and DEHs realized that they did not have the capacity to do either the requisite design or the construction themselves. They gave the work to EUD—somewhat reluctantly according to General Withers—and the division responded. Technical assistance to the facilities engineers for projects to maintain and to repair barracks came from the Facilities Support Section in the Engineering Division.[30] In 1981 Higgs appointed Steve Kupec as chief of the Facilities Support Section. By the end of fiscal year 1982, Kupec's section had grown from nine to thirty-six people and handled over $50 million of work on 134 projects.[31] (*See Map 17.*)

In another effort to promote better cooperation between the Army engineers and the military communities, General Withers joined the deputy chief of staff, engineer (DCSENG), at USAREUR, Maj. Gen. Henry J. Hatch, Jr., in convening two-day meetings to review the OMA projects. The meeting location varied: EUD headquarters, an area office, or Hatch's office in Heidelberg.[32] Both Hatch and Withers attended, and they urged commanders from VII Corps, V Corps, 21st Support Command, 26th Support Group, and Seventh Army Training Command to attend. The generals chaired the meetings as an inducement for the colonels to attend. According to Higgs, he and Withers wanted to engage and work directly with unit commanders rather than with subordinates.[33]

The effort succeeded in expanding the EUD workload. In recognition of Higgs' efforts in leading the Engineering Division through this expansion, the Society of American Military Engineers awarded him the 1981 Wheeler Medal, named in honor of Lt. Gen. Raymond A. Wheeler,



Map 17

a former chief of engineers. The award recognized Higgs' leadership in managing a "sixfold increase in the Military Construction Program for Europe," in achieving the substantial reduction of the design backlog, and in increasing contract awards.[34]

Persistent Manpower Problems

General Withers faced one of the cyclical discrepancies between staff numbers and workload that beset EUD. Continuing problems in recruiting and retaining qualified people hindered Withers' ability to keep up with the volume of work and meet schedules. In reports to Headquarters, USACE, he repeatedly argued that EUD had an inadequate number of staff positions, inappropriately graded positions, poor leadership in some key divisions and branches, and too much turnover.[35]

In March 1981 EUD had 730 people, just slightly above the year-end levels maintained by Delbridge and Wilson from 1978 to 1980. Turnover continued, particularly in the lower grades, where the rate was about 120 percent a year.[36] Many of the clerical workers were military dependents and subject to frequent moves. To combat turnover in the Resource Management Office (formerly Comptroller's Office), Withers upgraded positions to make them more attractive to Corps employees working in the United States.[37]

Anticipating the higher workload projected for fiscal years 1982 and 1983, Withers asked Headquarters, USACE, for more officer spaces and about 100 additional civilian spaces.[38] Because EUD had about 75 vacancies, he also organized a recruiting trip to the United States. In April 1981 a recruiting team went to districts in Norfolk, Mobile, Fort Worth, St. Louis, Omaha, and Seattle and to headquarters in Washington.[39] The team contacted 1,000 potential candidates, but only 42 signed on. By the autumn of 1981, EUD had 855 authorized spaces but only 740 employees.[40]

To attract strong civilians to the division, Withers requested approval to upgrade two positions—chief of resource management (to GS–15) and chief of construction (to SES). With approval of the new grades, Withers took the opportunity to search for candidates outside his current staff. He explicitly told the comptroller, Randolph S. Washington, and the chief of construction, Jose Cruz, that the promotions were not necessarily theirs. For both positions Withers chose applicants new to the division and to Europe.

Withers selected Ray Walker from Picatinny, New Jersey, as the new chief of resource management. Although offered the position of deputy comptroller, Washington did not want to serve as a subordinate in a division that he had headed since 1974. In mid-May 1981 he left for a job with the U.S. Support Command to Supreme Headquarters, Allied Powers Europe, in Belgium.[41]

Withers selected John Blake as the new chief of construction, and Cruz returned to the Fort Worth District. Blake had a wide range of experience managing overseas construction for the Corps. He had served in Korea, in the Marshall Islands, in the Mediterranean Division, in Saudi Arabia, and, before his arrival in Frankfurt, in Israel, where the Corps built two air bases that were part of the Camp David settlement between Israel and Egypt. Blake liked to be in the field, and he knew firsthand the difficulties of working with sovereign nations and managing both people and

projects in remote locations. In November 1981, just after arriving at EUD, Blake received the Meritorious Civilian Service Award, the Army's second highest civilian honorary award, for his work in Israel.[42]

The effort that Withers and his staff devoted to stateside recruiting finally began to pay off by early 1982. Both Blake and Walker were on board, and Withers reported to the chief of engineers that overall strength had grown from 740 in September 1981 to 830 in January 1982. Withers was pleased with the successes but frustrated by continuing problems in recruiting. Corps district leaders in the United States let employees move to overseas assignments only grudgingly, and coworkers resented employees who went overseas but retained reemployment rights in the stateside district. Nevertheless, in May 1982 EUD's authorized strength reached 906. German and third-country employees made up 276 of the total.[43]

The continuous growth in personnel created overcrowding at EUD headquarters. In 1978 the division began leasing space a few blocks from the I. G. Farben complex. In 1979 EUD constructed the first annex to the headquarters building; work began in the spring of 1982 on a second annex. Completed by October 1982, the second annex accommodated ninety employees.[44] This, too, was insufficient, so EUD rented a building in the Dornbusch area of Frankfurt. Initially, the Civil Section of the Technical Engineering Branch and the master-planning unit shared the Dornbusch offices with the Frankfurt Area Office, but soon the area office moved to leased space in Fechenheim, another area of Frankfurt.[45]

Developing the Engineering Division

Master planning developed as a significant new activity in EUD efforts to provide services to the military communities in Europe. While serving as the USAREUR engineer in Heidelberg, General Prentiss came to recognize the possibilities for the division to help the military communities develop individual master plans for their complexes and facilities. In January 1977 he raised the issue with the chief of engineers, Lt. Gen. John W. Morris, by reporting that there was no entity in Europe able to review and comment on master plans developed by the communities. Because he knew that EUD did not have the capacity to handle the assignment, Prentiss began to search for assistance from a private sector contractor.[46]

Joe Higgs, who arrived at EUD in February 1978, grasped this situation as an opportunity. Higgs wanted to expand the capability of his Engineering Division so staff could develop master plans for USAREUR communities and then help them prepare the project descriptions and paperwork to submit projects to Congress for funding. Master planning at EUD was still handled by only one man, Vic Schulman, so Higgs looked for help. The chief of engineering at headquarters approved the EUD request for funds from the OMA budget to hire three people for six months.[47]

By the time General Withers took command in late 1980, the division had six people in master planning and support from USAREUR to expand

this service. By the end of 1982 the Master Planning Section had grown to thirty-eight. Work had increased from eight contracts involving thirty projects, representing architect-engineer fees of $600,000, to a program of eighty contracts covering nearly 600 projects and totaling $50 million in architect-engineer fees.[48] Master planning had indeed become a major service provided by EUD to USAREUR's military communities.[49]

As chief of the Engineering Division's Planning Section, Terry Emmons coordinated the provision of master planning and other planning services to USAREUR, its six major subordinate commands, and their forty-eight communities and planning areas. At the beginning of 1981, his first full year at EUD, Emmons' section handled 40 projects. By the end of the year the number was 250, and Emmons was named Employee of the Year for 1981. Under his leadership the division developed a two-week master-planning course, prepared planning reference manuals and handbooks, and set up a program to provide definitive drawings for improvements that the military communities routinely requested.[50] On 1 July 1982, the Planning Section became the Planning Branch with three sections: Engineering Systems, Future Development, and Project Support.[51]

Beginning in the mid-1980s, EUD contracted with U.S. architect-engineer firms to develop master plans for all USAREUR communities. The results were mixed. The first firms hired had experience in master planning; but as the workload grew larger, EUD had to use firms with less experience in planning and often with only minimal familiarity with Europe. In hope of furnishing their customers in the U.S. military communities with better service, Higgs and Emmons turned to German architect-engineer firms.[52]

At a minimum, the planning studies conducted under EUD auspices provided an inventory of the eight hundred installations that USAREUR maintained. USAREUR kept very poor records of its facilities: the number and condition of the rooms, the capacity of electrical plants, where sewer lines ran, and so forth. EUD's goal was to provide each user with a plan that described existing conditions and assigned projections for three phases of development: the first year, over five years, and over twenty years.[53]

In the summer of 1985 EUD hired a new chief of the Planning Branch, Kristine Allaman. Having worked for the Installation Support Activity, Europe, the agency that combined all the installation support activities that came under USAREUR's deputy chief of staff, engineer, Allaman viewed planning as a service and a supplement to the communities' own engineering work. Reflecting her strong commitment to customer service, she reorganized the staff, combining people with different technical and planning skills to form teams to provide comprehensive services to specific communities. She encouraged the teams to get into the field, attend local master-planning meetings, and show the participants what EUD could offer. A GS–14, Allaman remained for several years as EUD's highest-graded female manager.[54]

By 1987 the Planning Branch had grown to fifty-six people. It covered all its costs with fees paid by the customers requesting its services. By

then the services also included interior design, energy studies, and sewer studies. EUD offered customers three phases of analysis and projections: a computer-aided design and drafting system that generated basic information maps and analyzed existing conditions; tabulations of existing and required facilities, as well as plans and analyses oriented toward future development; and comprehensive studies of both existing and required utilities. The planners also offered communities a land-use plan, a total plan for future development, and a master-plan report that even someone who had no background in planning could understand. In the late 1980s the branch annually handled more than 450 projects and $50 to $60 million in contracts. The Planning Branch also managed an environmental program for USAREUR involving over ninety contracts with an estimated programmed amount of $12 million. The environmental program services dealt with concerns such as asbestos, soil and ground-water contamination, hazardous waste, landfills, and radon gas.[55]

In June 1988 master planning received additional impetus from a new program, Army Communities of Excellence, sponsored by General Carl E. Vuono, the Army chief of staff. This program promoted consistency in a community's physical appearance and function, the establishment of standards for all construction, and the use of installation design guides, all elements that EUD's master planners emphasized in their approach to the military communities.[56]

The expansion of master planning illustrates EUD's commitment to provide its customers with comprehensive engineering services. In addition, Higgs oversaw growth in other sections in the Engineering Division. Like planning, the Foundations and Materials Branch had only one engineer when Higgs arrived. Over time he increased this branch to seventeen people, and EUD used the added manpower to broaden the range and quality of services that the division could provide to customers.[57] During 1976–1988 the Engineering Division staff strength fluctuated but grew steadily overall. (*Table 5*)

Managing the Workload

Although the Construction Division had been reorganized in the autumn of 1980, John Blake made additional changes after he arrived to head the division. Projecting a large increase in the number of construction projects and acting in accordance with his philosophy of decentralized management, Blake moved to streamline headquarters further and to give area offices even more authority. He saw that the division headquarters combined contract administration and construction management. Blake believed that the two jobs demanded totally different personal temperaments, making it difficult for one person to do both well:

> The guy who is the contract administrator has got to be someone who loves detail, who is willing to sit down and very meticulously write a mod[ification], go through the details, chapter and verse,

Table 5

Engineering Division Staffing, Europe Division
Fiscal Years 1976–1988

Year	Personnel*	Year	Personnel*
1976	161	1983	402
1977	184	1984	399
1978	271	1985	419
1979	230	1986	419
1980	230	1987	421
1981	261	1988	389
1982	363		

*Year-end figures

checking numbers, making sure everything is lined up in the right order. A construction manager, on the other hand, is normally an out-going young fellow who is full of vinegar, runs around and makes arrangements for everything, pulls it all together.[58]

Blake moved the functions and staff concerned with contract administration to the area offices and retained a strong group of construction managers in Frankfurt. He also received approval to strengthen the area offices by upgrading the civilian position of deputy area engineer to GS–14, the grade equivalent to the military rank of lieutenant colonel held by the area engineers. Revised procedures reduced duplication of effort among project offices, resident offices, the area offices, and headquarters, particularly in preparation of contract modifications. Additional technical support positions strengthened area offices, and headquarters provided supplementary support.[59] Richard Grimm, who had served in the Stuttgart Resident Office in the late 1970s and who returned to EUD as deputy area engineer in Turkey in 1982, recalled that the changes made the division "a lot more streamlined, a lot more efficient. You could get [things] done so much faster."[60] Withers supported the decentralization because he too felt that deferring decisions to Frankfurt and the headquarters staff led to delays that added costs to construction contracts.[61]

Blake also had Withers' support in transferring responsibility for negotiating and awarding construction contracts from the Construction Division to the Procurement and Supply Division (later called the Contracting Division). Blake experienced firsthand the pressures of an end-of-year contracting cycle within a few weeks after his arrival when almost a dozen people were brought in from the area offices to handle

the paperwork. After that experience, which he described as a "three-ring circus," Blake wanted contracts handled by the Procurement and Supply Division as they were in other Corps offices. The current system had evolved because of dissatisfaction with a chief of procurement and supply that had since departed. The incumbent chief, Theresa Watson, was competent and respected; both Blake and Withers were confident that she could handle the contracting responsibility. Accordingly, the Construction Division returned authority to award construction contracts to the Procurement and Supply Division.[62]

Construction in Turkey

The construction program developing in Turkey presented Blake with one of his first major challenges in the field. EUD had assumed responsibility for construction in Turkey in 1976 but had little to do. The government of Turkey had put U.S. military forces under provisional status in July 1975 because it felt that the U.S. Congress had broken the bilateral Defense Cooperation Agreement with Turkey by imposing the arms embargo after the Turkish-Greek clash over Cyprus. The provisional status curtailed American intelligence gathering, banned U.S. flights and cargo shipments through Turkey, and prohibited most new construction projects.[63]

In 1978 Congress lifted the arms embargo, and the two governments began negotiations for a Defense Economic Cooperative Agreement, signed in March 1980. In the new atmosphere, both the Army and the Air Force decided to undertake projects for the U.S. military assigned to Turkey. To support that decision, EUD sent a team led by General Wilson, Jose Cruz, and Joe Higgs to assess the extent of the work needed in Turkey and to establish the necessary diplomatic relations. After Congress approved funds for new construction to improve the living and working conditions and the security at Incirlik Air Base and five remote sites (Erzurum, Cakmakli, Corlu, Izmit, and Ortakoy) occupied by Army custodial artillery personnel, Wilson requested an Army captain to staff the TUSEG Resident Office.[64]

The designated officer, Capt. M. Stephen Rhoades, received a briefing in Frankfurt and arrived in Incirlik in July 1979 "with a set of plans under one arm and specifications under the other."[65] He had been sent to Turkey to identify contractors, solicit bids, and start a project. Rhoades had a bachelor's degree in systems engineering and a master's degree in civil engineering from the University of Florida but no prior experience in contracting and no experience in the Corps of Engineers.

With assistance from Herb Wooten, the long-time TUSEG employee serving as liaison at the Joint U.S. Military Mission Aid to Turkey, Rhoades located the office on the air base in Incirlik that TUSEG had abandoned when construction ceased. Rhoades reclaimed the quarters from the Red Cross, retrieved the office equipment and vehicles, and he hired a secretary. It took almost a full year to get TUSEG back into operation.[66]

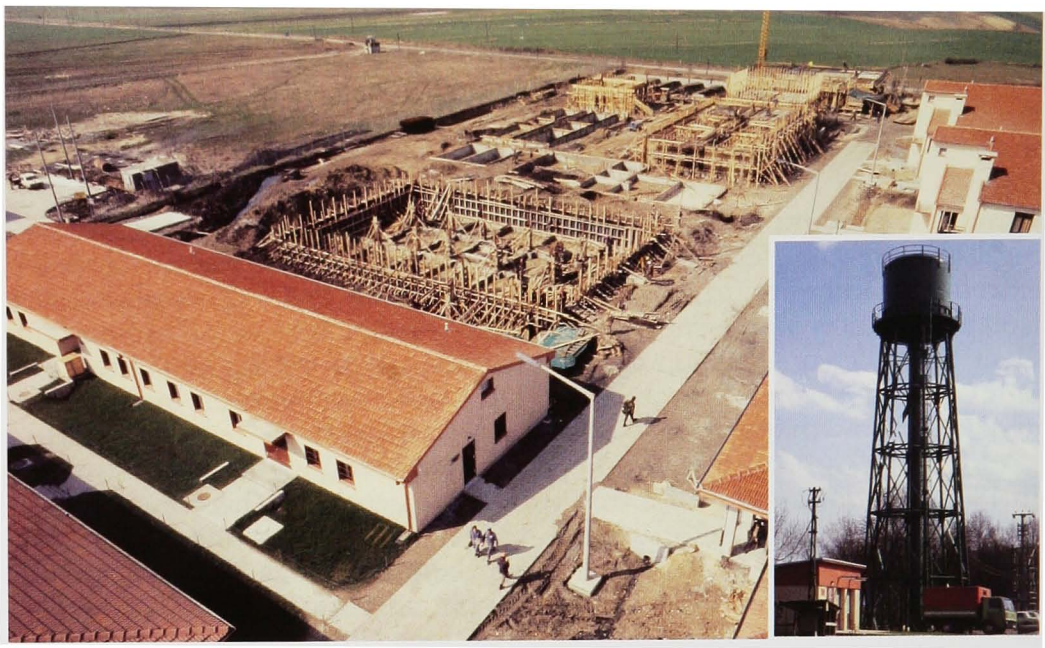
The first site scheduled for an upgrade was in Erzurum, a difficult place to start. The city's name means the eastern edge of Rome, that is, the boundary of the old Roman Empire. Located on a high plain in the mountains, it is close to the Turkish-Russian border and east of Moscow. The weather is very severe—long, cold winters with abundant snow. The first contract called for bachelor officers' quarters, bachelor enlisted quarters, a multipurpose building, and interior refurbishing of a number of existing buildings, all designed with features to protect the troops from the extreme weather and to make the buildings solid and well insulated. The isolated location made troop comfort and recreation especially important. Over time the construction came to include a new dining hall, a racquetball court, a gymnasium, and covered walkways between buildings to avoid the snow that drifted to depths over ten feet.[67]

Rhoades had difficulty finding a contractor willing to go to Erzurum. In 1980 he awarded the first contract for construction. There was no local labor market, so the contractor had to bring in workers and build a dormitory to house them. Within months the project was behind schedule. EUD's Construction Division sent people on temporary assignment to help Rhoades process contract modifications. To help resolve persistent problems, the division's deputy commander, Col. Philip Cowles, and the assistant division engineer for intergovernmental affairs, William Camblor, went to Turkey in October 1981. On 5 October Cowles, Camblor, and Rhoades met with a Turkish colonel from the Ministry of Defense to review the construction problems in Erzurum and to discuss ways to facilitate construction contracting in Turkey.[68]

In a report of the trip, Colonel Cowles wryly described work in Erzurum: "The history of this project is at times amusing and at other times sad." The design package had been prepared in English by the division's design group in Italy. Only after problems arose did the contractor in Erzurum admit that neither the foreman nor any of the workers could read English or understand the plans or the specifications. Moreover, the designers projected a construction period for the contract of 600 days, despite the fact that Erzurum's severe weather limited construction to about 180 days a year.[69]

Cowles' report listed a number of requests that Rhoades had made, including cold-weather gear for his employees and racquetball kits. He also asked for semiweekly telephone calls placed from Frankfurt to Turkey, because long-distance telephone service from Turkey was unreliable. The report suggested revised procedures and concluded with an admonition:

> In the future we should plan and tailor our procurement, we should pre-qualify contractors if we are not sure of them, we need strong capable field people to deal with a problematic contractor and, in Turkey, we need government assistance to ensure materials are available to the contractor.... The entire project gives one the impression of building according to a standard prevalent in Korea in 1965 or in America, perhaps 50 years ago.[70]



Army engineer projects in Turkey included the barracks in Cakmakli and this water tower (inset) *under construction in Izmit.*

John Blake's experience with construction in Saudi Arabia and in Israel gave him a good understanding of Rhoades' problems. Some experienced and willing construction managers, including Richard Grimm, became available for the work in Turkey when the air base projects in Israel ended. Grimm had worked under Blake on the missile sites in North Dakota in 1972 and had been a resident engineer in the Stuttgart Area Office in the late 1970s before he worked in Israel. As the program in Israel wound down, Grimm contacted Blake, who offered Grimm the position as deputy area engineer in Turkey.[71] Grimm arrived at Incirlik in January 1982, when EUD upgraded TUSEG from a resident office to an area office. During the 1982 calendar year the number of people at TUSEG increased from nine to twenty-one. The workload increased from four projects under construction to ten ready for advertisement and an additional twenty-four under design.[72]

With improved procedures and more experienced staff, the TUSEG office awarded contracts for work at four other remote sites: Corlu, Ortakoy, Izmit, and Cakmakli. EUD had lump-sum allocations to rebuild these sites; over time he supervised complete rehabilitation, including underground utilities, at all five installations.[73] TUSEG managed to award contracts at about 50 percent of the estimates and as a consequence found that they had ample money to get the work done.[74]

By all accounts Captain Rhoades was exceptionally mature and energetic—"one of those outgoing people that just thrived on adver-

sity." Rhoades, his wife, and two children lived on the Incirlik base in an eight-by-forty-foot house trailer. Other TUSEG staff lived on the economy, frequently in buildings without central heating, sometimes without hot water. Electricity was unreliable, which meant that the availability of water was unpredictable. There was a long waiting list for commercial telephones.[75] The Society of American Military Engineers awarded Rhoades the 1981 Sverdrup Medal established in memory of distinguished military engineer Maj. Gen. Leif Sverdrup. The award recognized Rhoades' extraordinary achievements in building the area office and in directing construction in remote sites throughout Turkey. In July 1982 Rhoades left Turkey to work with the Construction Branch of the Office of the Deputy Chief of Staff, Engineer, at USAREUR in Heidelberg.[76]

Tightening Organizational Control

Withers completed his tour as division engineer early in June 1983, and Brig. Gen. Scott B. Smith succeeded him. Smith had graduated from the U.S. Military Academy in 1956, the same year as Withers, and had served in Europe with the 12th Engineer Battalion from 1962 to 1965. Smith was assigned to OCE in 1973–1974 and served as district engineer in Huntington, West Virginia, from 1974 to 1977. Unlike any of his predecessors at EUD, he had experience as a division engineer: From 1980 to 1983 he commanded the North Central Division with headquarters in Chicago, Illinois.

By his recollection, Smith arrived at EUD with a definite management philosophy and what he characterized as a "fair amount of skepticism" that the organization was "on track." He asked a lot of questions, found that the answers were "not totally comforting," and concluded that EUD needed to shift its direction. Smith set for himself three principal tasks: shift the management attention of the division to the customer; improve relations with the Air Force; and improve internal procedures.[77]

For General Smith, all of his specific actions formed part of a plan to tighten the reins on the organization. To this end, he challenged a wide range of practices and procedures that he felt were hindering timely completion of work, detracting from achieving the mission, undermining discipline, or obstructing relationships with customers. He displayed intense concern about fraud, waste, and abuse, particularly in the procurement process and in the administration of contracts. An internal investigation revealed more than seventy-five instances of procedural irregularities that the division needed to send to Washington for review by USACE. Most were procurement irregularities, including unauthorized contract modifications that probably resulted from attempts by midlevel managers to get work done in a rush; none involved statutory violations. Revised procedures, training, and a greater emphasis on detail improved the situation.[78]

Shifts in Emphasis and Direction

General Smith in 1987

From conversations with the chief of engineers, Lt. Gen. Joseph K. Bratton, Smith perceived a need to change the overall operating strategy of the division from an emphasis on architect-engineer selection boards and design reviews to construction that satisfied the customer. He believed that the elements of process, which are a necessary part of any project, ought not to be evident to the consumer, whose real concern was with the final product. He found that attention in EUD focused on the Engineering Division, which measured productivity in terms of design placement, rather than on the Construction Division, which emphasized completed projects.[79]

General Smith took several immediate steps to shift the division's emphasis and direction. He reinforced efforts General Withers had started to give the chief of construction and the area engineers more authority, resources, and independence. He wanted area offices to have a procurement operation, legal support, and some capability to work with the government agencies in the host nations.[80]

Smith also changed the rating procedure for area engineers. In EUD's first two years, the area engineers reported to the EUD Executive Office. During General Delbridge's tenure, the deputy division engineer, Col. Carlyle "Chuck" Charles, instructed the area engineers to report directly to the chief of the Construction Division, although Charles and his successors continued to give the area engineers their performance ratings.[81] In 1983 Army regulations changed to permit the division commander to delegate the rating function to a civilian. Smith thought that it made sense to give responsibility for rating area engineers to the chief of construction because it was Blake who regularly met with them. The change meant that Blake, who as an SES held the civilian rank equivalent to general officer, would do the officer's efficiency rating for the area engineers who were military and comparable performance evaluations for the civilian area engineers. Whatever apprehensions the area engineers had, the change was implemented without protest. The commander of EUD, a general officer, remained the senior rater.[82]

General Smith broadened the division's senior leadership group to include the equal employment opportunity (EEO) officer, the personnel

officer, division counsel, and the chief of procurement and supply. He encouraged each participant in staff meetings to draw from his or her professional and life experiences solutions to the problems and challenges of the division. Smith also asked Blake to make sure that he took support elements, especially Joanne "Jodie" Close, the EEO officer, with him to the area offices, particularly the remote offices in Turkey and Greece.[83]

The Air Force as Customer

Shortly before General Smith assumed command at EUD, he attended a professional meeting with General Bratton, who was known for his low-key, soft-spoken style. According to Smith, Bratton drew him aside and said, "There's a guy here that I want you to meet, and it's very important to me that you get to know him." Introducing Smith to Air Force Brig. Gen. Joseph "Bud" Ahearn, Bratton said, "You and Bud are going to get to be good friends." Smith concluded, "That was his way of telling me, 'Make sure the Air Force knows you love them, and make sure the Air Force gets prime support.... Don't forget the guys in blue.'"[84]

About the time that Smith was assigned to head the Europe Division, Ahearn took over as base civil engineer at Ramstein Air Base in Germany and as chief of engineering services for United States Air Forces in Europe (USAFE). The Air Force had been a major customer of centralized contract construction in Europe since the days of USACAG. Over many years an attitude had developed that one division engineer summarized: "The Air Force is a very difficult customer in general for the Corps of Engineers." A chief of contracting admitted: "You'd be hard-pressed to find somebody [in EUD] that's a real fan of the Air Force."[85] Differences in procedure between the two services in handling both contracts and money and the Air Force's latitude in shifting funds from one project to another gave the "appearance of [their] not having a long-range, coherent program."[86]

General Withers had encountered difficulty with his counterpart in the Air Force, Brig. Gen. Sheldon J. Lustig. As chief of engineering services for USAFE, Lustig "indicated a strong desire" to get EUD out of NATO projects for the U.S. Air Force. In May 1982 Withers reported that execution of Air Force work continued to be late because of "late receipt of design instructions and criteria," conditions for which he held the Air Force, not EUD, responsible.[87]

General Smith strove to overcome the prevailing negative attitude toward the Air Force and to develop a good working and personal relationship with General Ahearn. Smith reinstituted the system of assigning one EUD deputy solely to the Air Force work and the other to the Army projects, a measure designed to establish that work for the Air Force was as important as what the division did for the Army. Col. Donald E. Hazen became "Mr. Air Force," and Smith again offered Ahearn the services of the division in support of Air Force construction under the NATO Common Infrastructure Program. Smith held team-building sessions with both USAREUR and USAFE to demonstrate that EUD had valuable servic-

es to offer the "total military family." Within six months Smith reported notable improvement in the relationship.[88]

EUD Wartime Responsibilities

One of several agreements signed in 1974 by the commander in chief of USAREUR and the chief of engineers stipulated that the Europe Division would provide engineering services to USAREUR in the event of war. Variously referred to as contingency planning or mobilization planning, the function received little attention during EUD's early years. The issue of mobilization became a major concern of strategic thinkers in the late 1970s. Their debate turned around whether the next war would be a quick, short engagement, such as the Arab-Israeli War of 1973, or a longer, more protracted campaign that would require total mobilization of the enormous economic and industrial resources of the United States.[89]

Most of this debate bypassed EUD as the division focused on the expansion of design and construction activity, although stateside divisions had been involved in planning and exercises for mobilization. General Smith, having served as commander of the North Central Division before coming to Frankfurt, addressed this concern. In October 1983, within weeks of his arrival, Smith established a separate staff element to develop and coordinate mobilization and wartime planning.[90]

General Smith's emphasis on planning for mobilization and wartime coincided with his broader intent to reinforce EUD as an Army unit. From the conduct of division staff, he concluded that EUD employees were "pretty lax in the way they thought about war." USAREUR personnel wore battle dress uniforms and engaged in field exercises, but EUD never participated. He also objected to the way the division's military personnel dressed:

> [They wore] their green uniforms like it w[as] Chicago or Vicksburg or San Francisco.... It just seemed to me a complete incongruity not to be aware of the fact that things could go wrong. I had been in Europe during the first Berlin crisis as a captain. I was aware of the fact that things could go pretty wrong without a whole lot of warning.[91]

In March 1984 General Smith went to Washington to develop with the USACE staff a detailed mobilization plan for EUD. In June he went to Heidelberg for similar meetings with the USAREUR staff. By July the Europe Division, USAREUR, and USACE had a draft agreement to implement a mobilization plan.[92] The military personnel serving in EUD would be bound by any mobilization order; certain civilian positions were designated "emergency essential" so the incumbents would remain in service in the event of mobilization. During mobilization, EUD would place its operations at USAREUR's disposal "so that we would use our expertise to contract with the host nation for construction supply services."[93]

Assessing EUD Management

Without doubt it was General Smith's personal style, rather than any organizational changes he instituted, that had the most significant impact on the people at EUD. He was intense, demanding, and abrupt. He worked very long hours, and some called him driven. The people he met with regularly became familiar with his impatience and intolerance for imprecise answers. Some staff members were angered or frightened by his aggressive style; from others it elicited respect.

The division counsel, Allan Aaron, was one of the latter. Aaron had worked in Corps district and division offices in the United States (North Central, Albuquerque, and Detroit) before he came to the Counsel's Office in the Engineer Command in 1973; after the death of Leonard Phillips in 1976, Aaron was promoted to division counsel. Aaron worked with Smith on cleaning up the procurement irregularities and won Smith's confidence. Smith gave him other special assignments, such as chairing a task force on automation. Aaron was often the target of Smith's outbursts of frustration, but with a distinct purpose:

> In a public forum, when I wanted to jerk somebody's chain so that everyone *else* would get a certain message, Al's chain would get jerked. Normally it was about something that many people besides Al had had a hand in. Maybe Al didn't even know what it was all about. But others would see [him as] the good-hearted and constructive recipient of a spur to the flank and would, I believe, be impressed and themselves motivated by his unfailingly positive responses.[94]

Aaron apparently understood Smith's intentions and his own role. He later affirmed that he "would go anywhere and do anything [for General Smith].... I really feel very strongly that General Smith was one of the high points in my career with the Corps of Engineers." Hasso Damm, long-time chairman of the Works Council, felt that Smith never acted capriciously and that he respected workers' rights. Damm thought that USACE "did the right thing by sending General Smith [to EUD]."[95]

By contrast, most of EUD's personnel failed to see the vision for the division that Smith had formulated so clearly in his own mind. With the expectation that he would be at EUD for two, possibly three years, Smith applied intense pressure at the outset. The commander expected to be able to ease that pressure once he had the entire staff moving as a team in the proper direction. Smith reflected:

> It is infinitely more suitable to be fairly rigorous and demanding up front, and then, as the situation allows, to become comradely and more relaxed, as opposed to coming in, being everybody's friend, and then finding out that something is not being done as well as everyone would wish—and then trying to turn up the heat on that particular part of the operation.[96]

Smith and the Europe Division never had the luxury of time that might have allowed the organization to settle down after his harsh interventions. After less than a year in Frankfurt, Smith was promoted to major general and reassigned to Heidelberg as USAREUR's deputy chief of staff, engineer. He left behind an organization in which most of the staff felt profoundly discomfited by his aggressive management style and actions.

Change of Command

Smith's successor, Brig. Gen. James W. van Loben Sels, who came directly from commanding the North Pacific Division of the Corps of Engineers, arrived in July 1984. Van Loben Sels' European experience had begun with the 23d Engineer Battalion, to which he was assigned from 1960 to 1963. In 1975 he had returned to West Germany, to the office of DCSENG. During that assignment he participated in planning the new Army garrison in Garlstedt in northern Germany. He remained in Europe from 1977 to 1981 as commander of the 18th Engineer Brigade, which included the combat heavy engineer battalions and a labor service group. A majority of the brigade's troop construction was done in support of the DEH, but the brigade also assumed a major responsibility in the planning and preliminary work on the range upgrade in Grafenwöhr. Van Loben Sels had asked that his tour with the 18th be extended to a third year so he could complete a full phase of the work in Grafenwöhr.[97]

Soft-spoken, gentlemanly, and reserved, General van Loben Sels' demeanor was a relief from the intensity of General Smith. The staff quickly recognized his keen intelligence and excellent memory; they appreciated his directness, precision, and calm authority, which they perceived as a sharp contrast with Smith's volatility.[98] He approached his command quite differently from his predecessor, because of basic differences in personality and because he took into account Smith's impact:

> I found an organization that had had its socks pulled up.... I came in with a different style. I came in with a view of going for the long-term, a three-year commitment, to build on the energy, if you will, that [Smith] had built up. Then [I] attempted to shape the organization, heal the wounds that seemed to be around the battlefield, and focus on the long-term.

He focused his attention on morale, organizational structure, and the need to develop a sense of identity for this large and geographically dispersed organization. He wanted to promote the organization, to "build a team from this group of folks, some of whom were fighting with one another ... and to cope with this huge workload."[99]

To improve morale and the organization's self-image, General van Loben Sels arranged social events, such as dances, parties, and a Christmas ball, to which every member of the staff was invited. Such gala gatherings had not taken place in recent experience. "We brought them

all together," van Loben Sels recalled, "and we had our uniforms on—dress uniforms. Most of them had never seen us in our military dress uniform."[100]

General van Loben Sels

Van Loben Sels' promotion to major general offered another opportunity to build up the division's self-image. Like several of his predecessors, he was promoted during his command at EUD, but, as Damm noted, "He was the first one to make it into a great ceremony."[101] Van Loben Sels asked the V Corps commander for a parade, and he invited representatives from the German government and military, German construction agencies, and U.S. military commanders, including General Ahearn from the Air Force. At the ceremony on the parade grounds, the chief of engineers, Lt. Gen. E. R. Heiberg III, pinned on van Loben Sels' second star. After the parade and ceremony General van Loben Sels and his wife hosted a reception at their quarters in Bad Vilbel.[102]

Organizational Structure and Data Systems

In addition to ceremony as an enhancement to self-image and morale, van Loben Sels turned his attention to the structures through which EUD operated: the division's organizational framework and its use of information processing systems. Shortly after he arrived at the division, van Loben Sels launched a study of the division to identify an organizational structure best suited to accomplish its mission. A study team from the U.S. Army Engineer Studies Center (ESC), an agency of USACE located at Fort Belvoir, Virginia, worked with an advisory group at the division to consider a wide range of issues: goals, problems, current and projected peacetime volume of work, geographical boundaries, operating environment, host-nation responsibilities, potential wartime mission, and requirements for interacting with customers. After the division's executive committee reviewed the ESC study in February, the final report was published in April 1985.

The study concluded that EUD's problems could be "summed up in three words—it's too big." The report continued: "No internal reorganization will resolve its physical space problems; no centralized operating division structure can service so many varied clients responsively. [EUD

should adopt] the traditional USACE decentralized division HQ/district structure, but with some modifications."[103] Specifically, the report recommended that EUD have a division headquarters in Frankfurt with district offices in Frankfurt, Kaiserslautern, and Stuttgart. Only Turkey would remain as an area office.

General van Loben Sels rejected the recommended organizational structure. He was not convinced that the volume of work would remain high enough to make the costs of reorganization acceptable, and he reasoned that the overhead required by the district structure would be very high. Instead, he continued to decentralize by giving more authority and additional resources to the area engineers. By enhancing the authority of the division's area offices, van Loben Sels hoped to eliminate administrative bottlenecks and achieve greater productivity, thus accomplishing what the report recommended without the costs of the reorganization.[104]

General van Loben Sels also established a study group of senior division personnel to address automation. He saw this effort as building on the study by the ESC that had identified the paucity of automated data processing (ADP) in the division as a serious problem. The ESC study was particularly critical of support to the area offices, noting the "minimal utilization of ADP capability and communication from the division offices to the field." Furthermore, "The [ADP] environment is archaic, even compared to Corps standards. ADP equipment is scheduled to be placed in the field in the near future, but there does not appear to be any plan to provide standard programs, the required ADP skills to utilize the equipment, or specific guidance on utilization."[105]EUD's experience with data processing had been unsatisfactory long before van Loben Sels initiated his study. The division's first commander, General Prentiss, had had little success in bringing the new organization into conformity with Corps of Engineers use of two automated reporting systems, COEMIS (Corps of Engineers Management Information System) and AMPRS (Automated Management Progress Reporting System). The systems had been designed with no regard for the division's unique requirements, and their implementation was complicated because of EUD's distance from Washington and the frequent turnover of branch chiefs and operators.[106]

COEMIS recorded accounting data and produced reports on the financial results of operations and on current or updated financial conditions. In investigating possibilities for implementing COEMIS in 1975, EUD staff learned that the computer hardware on hand was incompatible with the software. Furthermore, it was not feasible to change hardware and retrain staff, nor was COEMIS able to handle the division's special requirements, particularly tracking the different categories of employees (DACs, local nationals in several countries, local hires) and the multiple currencies in which the division conducted business. EUD decided to use the Measurement Information Data Acquisition System project management software developed at the Fort Worth District and to set up an interim finance and accounting system. EUD's commander in the late 1970s,

General Wilson, planned to complete conversion to the COEMIS system in fiscal year 1979, but the division did not meet the target date.[107]

Discussions of the applicability of AMPRS, a system for monitoring execution of the total construction program, paralleled the discussions of COEMIS. Implementation of AMPRS did not begin until 1977. EUD staff supplied managers in Washington with information showing the modifications needed to make the software usable in Europe. When the division finally began to use AMPRS in 1978, the system failed to meet its needs. The software's shortcomings were not restricted to EUD. Fewer than half of the seventeen districts using AMPRS—those that already had a strong in-house computer staff—reported finding it useful.[108]

In the summer of 1980, as General Withers prepared to take command of EUD, the deputy director of resource management in Headquarters, USACE, told him that the Europe Division was the only part of the Corps that had not been integrated into COEMIS's finance and accounting module. Withers decided that he needed to upgrade the position of chief of the Resource Management Office and to recruit civilians from the United States who had experience with this software. During the next two years, Withers emphasized implementing COEMIS, a goal the division finally achieved by the end of fiscal year 1982. When Withers completed his tour, the division had also installed an automated funds control system.[109]

When General Smith took command of EUD, he also perceived the value of automation, particularly as a tool to connect the area offices with division headquarters in Frankfurt. The staff had widely divergent levels of computer expertise, and Smith did not want the most computer-competent persons to dominate the EUD decision-making process. He asked the division counsel, Allan Aaron, to convene a task force to weigh the best uses of the technology for EUD. The committee continued after Smith's departure to develop a plan for purchasing and installing IBM-compatible microcomputers at headquarters and in the field offices.[110]

The information systems planning team formed by General van Loben Sels continued studying COEMIS and AMPRS. In 1985 it articulated a new level of insight: EUD's problems implementing the Corps of Engineers software programs stemmed from the character of the systems themselves. They were reporting systems, not management systems. The systems collected information only for reporting up the chain of command; the data were not used in the day-to-day management of projects or personnel or to assess trends and anticipate needs. Thus EUD's project and construction managers had little practical use for AMPRS and COEMIS and little incentive to make reporting a priority. Van Loben Sels' study team also acknowledged that "there is, and always has been ... a perceived lack of data integrity in AMPRS."[111]

When General van Loben Sels reviewed the status of automation at the division in 1985, computer hardware consisted of an in-house Harris 800 super-minicomputer and an assortment of microcomputers acquired in 1984 and distributed throughout the division, including to the field offices. Under the supervision of the ADP office, EUD was using standard

Corps of Engineer software applications, including AMPRS and COEMIS. The microcomputers had word processing, spreadsheet, and database software. The word processing center, established by General Delbridge in 1977 with the Wang hardware-software system, remained under the purview of the Office of Administrative Services, rather than the ADP center, and it was not heavily used. New technology had made the very idea of a dedicated word-processing "typing pool" out of date.[112]

To assess EUD's data processing needs, General van Loben Sels decided to use the IBM Information Systems Plan, a structured planning approach by which organizations examined their business processes to determine what data were needed before they looked at automation. The objective was to develop a plan that would satisfy the short- and long-term requirements for information within the organization. Van Loben Sels conjectured that this process would engage the staff throughout the organization and facilitate planning. The information systems planning study did help the staff understand business processes, but General van Loben Sels did not find that it significantly improved automation. Nearly a decade later he expressed disappointment in the results of the study process.[113] Nonetheless, the team's recommendation and a Department of the Army directive prompted EUD to establish an Information Management Office that combined ADP operations, programming functions, and word-processing activities, and included communications, records management, visual arts, libraries, and printing and publications. The new office opened on 1 April 1986, months after van Loben Sels' departure.[114]

Despite a desire to stay at EUD for three years, General van Loben Sels was reassigned after only fifteen months. In late September 1985 he assumed command of Fort Leonard Wood, Missouri. On the short tenures of Smith and van Loben Sels, Hasso Damm reflected: "The sequence of the two made out of the shapeless organization a formed organization, first shaking up, and then [taking] the shaking portions and put them together again in one body."[115]

Stability Achieved

The chief of engineers, General Heiberg, tapped Brig. Gen. James W. "Bill" Ray, commander of the Middle East Division, to fill the unexpected vacancy in Frankfurt, making Ray the fourth division engineer at EUD in as many years. The mammoth construction program managed by the Corps in Saudi Arabia was drawing down, and General Ray had received orders to move to the division's rear headquarters in Winchester, Virginia. Instead of returning to the United States, he moved to Frankfurt.[116] Ray's previous assignments included district engineer in Omaha; assistant commandant, U.S. Army Engineer School; commander, 35th Engineer Battalion in Vietnam; and assistant director for civil works in Headquarters, USACE. He had also served as chief, Forces Modernization Division, and as secretary of general staff of USAREUR.

From the outset, EUD staff perceived General Ray as open, friendly, and outgoing—someone "you could talk to." He had a good sense of humor and was very sociable; he and his wife participated frequently in ski trips and outings organized by a volunteer committee in the division. Although not a forceful public speaker, Ray had good communication skills; area engineers and field staff respected his knowledge of construction.[117]

One segment of the staff felt especially close to General Ray—the people who had worked for the Corps on the construction program in Saudi Arabia. During the drawdown in Saudi Arabia, General van Loben Sels had encouraged EUD to hire people leaving the Middle East Division; as a result, the division had several dozen "Saudi people." A special camaraderie existed within this group, and they included General and Mrs. Ray in the "Saudi parties." Some division staff resented the close social circle maintained by the people from Saudi Arabia.[118]

As a manager, General Ray disliked ad hoc actions and pressed the staff to develop systems. He practiced participatory management, respected the opinions of his staff, and paid special attention to working conditions and staff morale. General Ray adopted the two goals that General van Loben Sels had articulated for the Europe Division: (1) construct excellent facilities that are on time, within budget, attractive, and maintainable; and (2) be an excellent organization. Ray wanted to make EUD a place where people would want to come to work every day; his long-term goal was to develop a plan for the division for the 1990s.[119] With these goals and his systematic approach to management, General Ray guided the Europe Division through several organizational changes and instituted an innovative program that focused staff attention on quality and excellence.

Organizational Changes

Several significant organizational adjustments occurred during General Ray's tenure at EUD. Following Army directives, the division established the Information Management Office and the Logistics Management Office, which handled transportation services and some functions previously performed by the Office of Administrative Services.[120] Ray redefined the responsibilities of the division's deputies in an attempt to consolidate and clarify contracting authority within the division. He also redistributed the activities related to intergovernmental affairs when long-time employee William Camblor retired.

General van Loben Sels had asked the chief of engineering, Joe Higgs, to reorganize the Project Management Branch in his division by geographic areas. Van Loben Sels wanted project managers to work more closely with individual directors of engineering and housing. He also wanted each director of engineering and housing to have a single point of contact in engineering at EUD.[121] Higgs resisted the reorganization because this structure made balancing the workload among project managers more difficult. Nonetheless, during General Ray's tour, Higgs effected the changes.[122]

General Ray

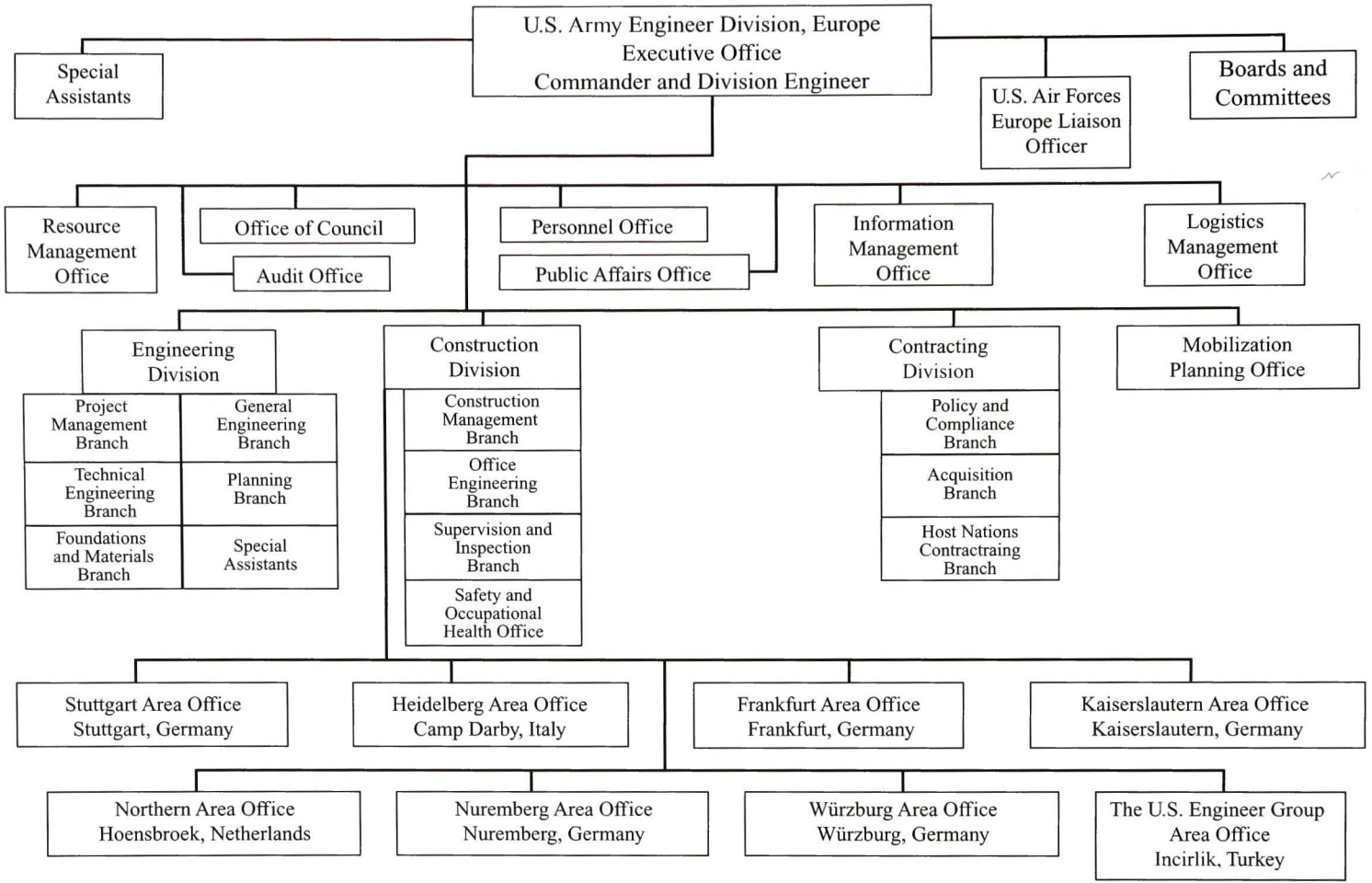
In January 1987 General Ray approved a reorganization of the Construction Division aimed at placing responsibility for day-to-day problems with midlevel supervisors, allowing branch managers to concentrate on long-range planning. (*Chart 11*) The chief of construction, John Blake, served as the catalyst for this reorganization, which finally took place after a year of consultations with USACE headquarters in Washington. The reorganization established three branches within the Construction Division: Office Engineering, Construction Management, and Supervision and Inspection. Except for medical facilities, certain unique projects, and contract modifications of more than $100,000, the division gave the field offices authority to administer these contracts without referring issues back to headquarters for decisions.[123]

Soon after General Ray arrived, he began to examine the roles of the two deputies, particularly in reference to their authority over contracting. From the beginning of the division, both deputies had contracting authority; since 1983 one deputy had handled contracts for the Army program, the other for the Air Force program. The 1985 report by the Engineer Studies Center identified the involvement of two deputies in contracting as a management problem. Because each deputy processed over 1,000 contracts each year, both were overwhelmed by their operational responsibilities. The report observed, "No one is planning because they are too busy performing operations."[124]

The system also created potential conflicts of interest, because a deputy worked with the customer/user and then signed the contracts involving the same clients. After consulting with Division Counsel Aaron, Higgs, Blake, and the chief of contracting, Richard Wisdom, General Ray decided only one deputy and the chief of contracting should have contracting authority. In June of 1986 Ray appointed the deputy division engineer, Col. John Moravec, with contracting authority. Moravec had already served for fifteen months in EUD as assistant commander for DEH support. General Ray gave his other deputy, Col. Dennis Culp, responsibility for management and planning.[125]

Ray also transferred additional contracting authority to the area engineers and put lawyers in five area offices: Stuttgart, Kaiserslautern, and

Chart 11: Organization of the Europe Division, July 1988



Construction of recreational facilities provided opportunities for social outings, such as ski trips to Garmisch.

Frankfurt in Germany; TUSEG in Turkey; and the Northern Area Office now located in the Netherlands. The lawyer in Stuttgart also served the area offices in Nuremberg and Würzburg. This reorganization reversed the centralization that had taken place in 1980 when the lawyers from the Mediterranean and Stuttgart Area Offices were reassigned to headquarters in Frankfurt. Ray assigned supervision and oversight of the Office of Counsel and its supporting elements in the area offices to Moravec.[126] This reorganization gave EUD's area offices independence in contracting comparable to the authority of districts in the United States. Because it was an innovation within the Corps of Engineers, the measure required USACE approval.[127]

General Ray sought to add flexibility to contract administration by promoting and improving the use of indefinite delivery (open-ended) types of contracts. The division negotiated prices for various services with selected architect-engineer firms and signed contracts up to a maximum of $500,000. When a community had a project costing less than $50,000, the director of engineering and housing only specified the services he needed on a delivery order to the firm under contract and the firm began the work. The indefinite delivery contracts eliminated the need to negotiate a separate contract for each small job. The architect-engineer firm could deliver services on individual projects up to the maximum amount of the contract.[128]

In 1986 the division received permission to allow a second-year extension to the contracts with architect-engineer firms, and the directors of

engineering and housing received permission to write delivery orders up to $85,000. These new procedures reduced administrative labor, particularly the hundreds of hours of overtime normally expended to prepare and place contracts at the end of a fiscal year. In 1988 EUD held seminars to bring together architect-engineer firms and the engineering staffs from military communities to familiarize everyone with the regulations governing the indefinite delivery contracts.[129]

Intergovernmental Affairs

The retirement on 4 July 1987 of Camblor, deputy division engineer for intergovernmental affairs, necessitated a reorganization. Camblor had served in Europe continuously since 1944, first as an Army officer and then for forty years as a civilian in the military construction organizations that had preceded EUD. During this long career, Camblor won a number of awards, including designation as a distinguished post member of the Society of American Military Engineers in Frankfurt in 1977, a decoration for Meritorious Civilian Service in 1985, and the Exceptional Civilian Award from the Secretary of the Army in 1987. From 1983 until his retirement he served as chairman of the Sending States Construction Group, which included representatives of the six NATO nations that had troops in the Federal Republic of Germany. In recognition of his extraordinary career, Camblor was honored with a formal retirement ceremony on the grassy area in front of the Phillips Building. Officials from USAREUR, V Corps, and a number of the NATO host nations attended the ceremony. U.S. military units marched, and a German army band played. At his retirement dinner, Camblor received medals from several nations, including the Federal Republic of Germany, whose minister of construction presented him with *Das Grosse Deutsche Verdienstkreuz* (The German Grand Service Cross). After the ceremony, EUD hosted a retirement dinner at the officers' club.[130]

General Ray and others described Camblor as "a unique asset to the organization" and "essentially irreplaceable."[131] Because the division could not fill the SES position that Camblor had held nor replace his years of experience, Ray chose to divide Camblor's responsibilities three ways. The chief of engineering, Higgs, was named deputy division engineer for intergovernmental affairs and designated to attend meetings of the Sending States Construction Group. Camblor's former assistant, Michael Mele, reported to Higgs. The chief of construction, Blake, took over responsibility for activities in the technical area, and the division counsel, Aaron, conducted the negotiations with foreign nations required to implement new programs, in addition to interpreting the intergovernmental agreements.[132]

Focus on Customers and Quality

Early in his tour at EUD, General Ray took up the 1986 USACE theme, "Leaders in Customer Care." Generals Smith and van Loben Sels had

emphasized the importance of satisfying customers by delivering a high-quality product, but neither commander had established a specific program. General Ray chose Total Quality Management (TQM), a program developed by the 3M Corporation, as the vehicle for making customer care a top priority for the division. Ray proposed that EUD develop a TQM program and appointed Colonel Moravec as quality director to spearhead the effort.[133]

At a three-day conference of the division's managers in January 1987, General Ray reminded them that President Ronald Reagan had issued a directive requiring all federal government agencies to become 20 percent more productive by 1992. Ray stressed that the division could be a leader in customer care while meeting the president's goal. A spokesman for 3M Corporation explained the Total Quality Management concept. A few weeks later thirteen supervisory-level employees from EUD attended a five-day workshop on TQM at 3M headquarters in St. Paul, Minnesota. They returned to Frankfurt as trained facilitators, eager to implement a modification of the program they dubbed EUD Quality Management (EQM).[134]

In 3M's terminology, *quality management* is a process that focuses on people, not on products:

> EQM is designed to provide a new culture to the Division and every employee who works here. Its deceptively simple process is to do right things right. And at the basis of the program is the goal of 100 percent conformance to customer's expectations. That is, if our customer expects us to be able to do it, we will do it—100 percent of the time. If we cannot do it, we will change our customer's expectations.[135]

Total Quality Management defines a customer as any person within an organization who expects work products from other employees.[136] EQM challenged the very nature and orientation of the personnel at EUD:

> The organization has been product-oriented for so long that to talk about being customer-oriented is a major change. That doesn't mean you ignore the product, but there is more to meeting customer expectations than delivering the product. It's the manner in which we deliver the product.... It's how we explain to the customer what we can and what we cannot do.[137]

During 1987 and early 1988 articles in every issue of the *Corps Line* explained EQM, gave the reactions of staff, and reiterated the importance of quality. General Ray asserted often that training employees was "the most important thing we are going to do in EUD in the next two years."[138] In the first phase of EQM's implementation, every employee participated in a mandatory full-day session. The first group of facilitators trained others; in August 1987 a second group of facilitators was trained. By

September, more than 800 people had participated in a session that covered the concepts, principles, and skills of EQM. Personnel throughout the organization responded enthusiastically, discovering that the program generated a lot of energy by providing all employees with an opportunity to be included in the management of the organization.[139]

To explain the need for EQM, General Ray used a parable, the story of the frog in a pot of water. The frog, Ray recounted, is an adaptable creature that adjusts his body temperature to his environment. Whether the water is hot or cold, the frog adjusts until he is comfortable. In a pot of water over a fire, the frog is a slave to his proven routine and continues with the same response as the heat increases. By the time the water reaches a boil, the frog has adjusted himself right into oblivion. "The heat is on for organizations that want to succeed in these changing times," Ray told his staff. "To be successful, organizations must change with the environment" and find new ways to adjust or risk ending up like the boiled frog. The frog became the unofficial emblem of Ray's leadership, and he was inundated with gift frogs. The story of the frog conveyed a serious message—what worked in the past might not work in changing times. Productivity and its ability to attract customers would be the measure of EUD's success in an increasingly competitive environment.[140]

By the autumn of 1987 the EQM initiative attracted the attention of the deputy assistant secretary of defense for installations, Robert A. Stone, who singled out the division for special commendation. The following January EUD provided a display describing EQM for the Department of Defense's Productivity Month celebration in the Pentagon. In his spring 1988 visit to Frankfurt, the chief of engineers, General Heiberg, praised the program, saying, "General Ray did not invent the word quality, but [he] has put new meaning into the word."[141] In May 1988 Ray was able to report that Secretary of Defense Frank Carlucci had signed up for the TQM process, "and he has ordered this division to continue working on total quality management."[142]

General Ray strove to make EUD a place where people wanted to work. To advance this goal, he introduced physical changes in the working environment. He had the division replace the old gray metal desks and file cabinets with space-saving modular office furniture.[143] To emphasize his belief in the importance of the division's work, and to record division activities and work in a tangible and easily accessible form, Ray allocated funds for this history of the Europe Division and its predecessor agencies.

General Ray perceived the implementation of Total Quality Management as the most far-reaching change he would make as Europe Division engineer.[144] The concept incorporated his values by emphasizing the positive, building team spirit, and engaging everyone across departments, nationalities, and civil service grades. The energy, enthusiasm, and cooperation generated by participation in EQM added to the loyalty and confidence General Ray personally inspired in those who served with him at EUD.

In the spring of 1988 the Europe Division was operating smoothly and the staff felt optimistic. Construction placement for the fiscal year ending 30 September 1987 had been an all-time high of $527 million; leaders expected placement for fiscal year 1988 to be even higher. EUD workforce numbered nearly 1,200 in headquarters and in eight area offices: Frankfurt, Northern Area, Stuttgart, Kaiserslautern, Nuremberg, Würzburg, Heidelberg, and Turkey.

9

MANAGING DESIGN AND CONSTRUCTION

Although the Europe Division (EUD) evolved as an organization under a succession of commanders between 1977 and 1988, the engineer mission in Europe remained constant. John Blake, who served as chief of construction during most of that decade, trenchantly defined that mission: "The real reason we are here is to build things, [to] repair things ... for the benefit of the soldiers and airmen in Europe."[1]

Building things for soldiers involved EUD in an increasingly vast, volatile, and complex operation. By 1980 the division managed military construction in countries from the North Sea to the eastern Mediterranean and the Caspian Sea, a land mass roughly one-third the size of the United States that stretched over a distance slightly greater than that between New York and San Francisco. In 1977 EUD operated under eleven different working agreements in seven countries; by 1987 that had increased to twenty agreements with eight countries. (*See Map 18.*) Staff in the division conducted business daily in a variety of languages and under a multiplicity of national laws, regulations, and customs.[2]

Although the volume of work measured in dollars was not the largest in the Corps of Engineers, EUD workload, when measured by the number of projects, was larger than any other engineer organization in the world. In 1977 the division administered 1,800 projects in design and another 300 in construction. Over the next decade the number of design projects remained in the same high range, while the volume of construction placement increased as design projects moved to the construction phase—from $130 million in 1977 to $492 million in 1986. The EUD leadership cadre judged its task in dealing with these projects, many of them quite small, as far more complicated than administering a handful of multimillion-dollar contracts for a single customer, as the newly created Middle East Division seemed to be doing. By 1986 EUD had more than twenty customers, including the Army, the Air Force, the Navy, and eight Department of Defense agencies. The division's funds were drawn from fifteen sources,

Map 18

and it paid its bills in almost as many currencies, each of which had different and fluctuating rates to the dollar, a factor often ignored by Congress and planners in the Pentagon.[3]

Many of the Europe Division's tasks demanded quick action and rapid completion. Design and construction frequently had to be executed in fewer than twelve months. On longer projects, initiation was often urgent; work had to be started before all the requirements had been defined. This meant that the scope of projects changed as the work progressed,

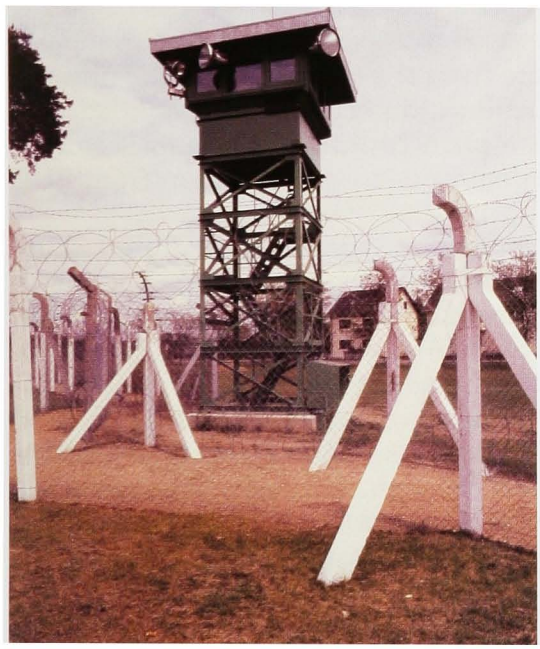
complicating execution and increasing the costs of both design and construction.[4] This volatility had been characteristic of the engineer mission in Europe for much of the period since the end of World War II. It was not a characteristic of most civil works projects managed by the Corps of Engineers in the United States.

The vastness, complexity, and volatility of EUD's work make it difficult to describe in simple and consistent terms. Indeed, a single descriptive framework cannot adequately portray the division's many tasks. Several of the many ways in which the U.S. Army Corps of Engineers, the Europe Division, and its customers described and measured the division's activities are explored below, including methods of contracting, sources of funding, and management of the work through the field offices.

Methods of Contracting

Like its predecessor organizations in Europe, EUD relied largely on contractors. Architect-engineer firms designed projects and construction companies built facilities ranging from missile sites, hardstands, and barracks to hospitals and bowling alleys.

In the European context the predominant method of contracting was *indirect*; that is, U.S. military engineers depended on host-government agencies to award contracts for design, construction, or both. Representing the interests of the U.S. government and the military user, EUD prepared the original contract package, whether for design or construction, and approved the final product.[5] The process was called *direct contracting* when EUD awarded contracts without a host-government agency as intermediary.

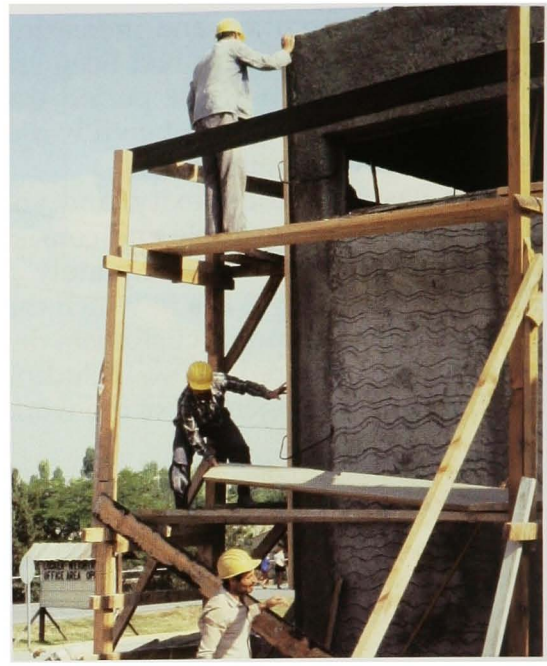


The Europe Division generally relied on contractors to complete facilities, such as this prison in Mannheim.

Three options existed for a project assigned to the Europe Division. First, design and construction could be indirect, in which case the host nation awarded the design and construction contracts. Second, design and construction could be direct, in which case EUD awarded both contracts. Third, EUD could contract directly for design and indirectly for construction, meaning that EUD awarded the design contract and the host nation awarded the construction contract. Theoretically,

a fourth option existed, but a project designed by a host nation would almost invariably be built by it as well.[6]

The process for handling any particular project was determined by one of the many country-to-country agreements under which EUD worked. Generally, those agreements specified that the host nation retained control of all construction within its territory. Each nation, of course, followed different rules and customs concerning the nature of the contract, contracting procedures, selection of materials, guarantees, and the like. A look at contracting in two countries, Turkey and West Germany, illustrates some of the complexities EUD's management personnel handled.



Construction of even this simple warehouse near Ankara involved special measures to strengthen the Turkish construction industry.

Contracting in Turkey

Turkey was geographically remote from the center of the U.S. military presence in Europe, and its construction industry was less sophisticated than that of central and western European countries. These factors conjoined to make Turkey the focus of disproportionate attention from EUD personnel.

EUD inherited a difficult arrangement in Turkey. The United States had imposed an arms embargo in 1974 in response to Turkish action during a crisis over Cyprus. The government of Turkey thereupon cancelled the Defense and Economic Cooperation Agreement that regulated U.S. military construction in the country. In negotiations for a new agreement in 1975–1976, the Turkish government insisted on extensive control over contracting and construction. All projects had to be approved by the government of Turkey, which reserved the right to review all contractual documents. The Turkish government submitted names of approved bidders for contracts; bid openings and negotiations had to include official Turkish representatives; the government insisted on placing a resident engineer on each job; and, for projects prefinanced by the United States, the Turkish government received 3 percent of all funds recovered from the North Atlantic Treaty Organization (NATO).[7]

The new Defense and Economic Cooperation Agreement also committed the United States to foster Turkish economic development as well as

joint defense. To the extent feasible, the United States agreed to procure all materials, labor, and all other services in Turkey. The Turkish government strictly enforced the limits on imports and insisted on approving lists of construction materials before construction could even begin. These procedures contributed substantially to delays in construction.[8]

To fulfill the United States' commitment to foster economic development, EUD sought to introduce advanced methods into the Turkish construction industry whenever possible.[9] The United States Engineer Group (TUSEG) provided training for both contractors and workers, including on-the-job training, films, and seminars on topics such as contracting, construction methods, and asbestos removal. This special effort enabled more Turkish contractors to meet U.S. specifications.[10]

Contracting in West Germany

The authority that the Turks insisted on retaining over decisions concerning U.S. military construction graphically shows how important the issue of control is in any country. It was no less important in West Germany, where the Europe Division constructed the majority of its projects and where relations between the United States and Germany had a very different history from the relations between the United States and Turkey. The agreements governing contracting for military construction in Germany first took shape during the 1950s, when the Federal Republic's sense of sovereignty was tentative and Soviet power threatened Western Europe. As West German self-confidence grew and as Germans began to discount the Soviet threat, the Federal Republic asserted its right to control military construction within its own boundaries.

United States Army, Europe (USAREUR), and West Germany signed the basic agreement, the *Dollarbaukontrakt,* (Dollar Construction Contract), in 1956. Modified in 1961, this agreement formed the basis for all dollar-funded design and construction executed in the Federal Republic. Coupled with the supplementary agreement to the NATO Status of Forces Agreement signed in 1959, these accords governed indirect contracting for U.S. military construction.[11] According to the basic law (constitution) of the Federal Republic, the ten West German *Länder* (states) were the enforcing agencies of federal statutes. Under this decentralized system, federal laws were frequently interpreted differently at each building site, forcing Army engineers to prepare designs to meet the standards in different German localities.[12]

In the mid-1950s, when West Germany achieved sovereignty, new procedures replaced those governing U.S. military construction. With adaptations that strengthened German control, these procedures remained in force in 1974. Thus, EUD dealt directly with the Ministry of Defense or the Ministry of Construction in Bonn primarily to work out general agreements concerning construction programs. At the local level, where actual building took place, contracts with builders came under the jurisdiction of states and localities. The Bonn ministries signed contracts with the

U.S. agency and issued federal construction orders to state construction offices (*Oberfinanzdirektionen*), which in turn passed the orders to local construction offices (called variously *Landesbauämter, Staatsbauämter,* or *Finanzbauämter*) for execution. EUD had only indirect contact—and no contracts—with the company executing the work. The division's contracts for U.S. military construction were with the appropriate West German governmental agency.[13]

For reasons of coordination, contracts drawn up by EUD for the Ministries of Defense or Construction passed through the West German government's *Bautechnische Arbeitsgruppe* (Technical Working Group for Construction), created in 1956.[14] This agency, which maintained its offices in Frankfurt, proved over the years an indispensable ally. In recognition of the value of its role, EUD presented the director of this German agency, Viktor Krupinski, with the U.S. Department of the Army's Outstanding Civilian Service Award days before his retirement after a nineteen-year tenure. In a small ceremony on 26 February 1976, EUD lauded Krupinski's role in facilitating construction for the Nike and Mace missile programs of the early 1960s, the Hawk program of 1965–1968, the TAB VEE (Theater Air Base Vulnerability Evaluation Exercise) aircraft shelter program, and the two German-financed programs of the 1970s to modernize U.S. facilities.[15]

As West Germany became more confident of its position in international affairs, it sought to bring U.S. (and other) military construction under its control. The effort culminated during the 1970s in negotiations concerning the *Auftragsbautengrundsätze* (*ABG–75*), the principles of contract construction formulated by the Federal Republic to replace the bilateral agreements of earlier years. In the negotiations for *ABG–75*, the West Germans maintained that one single accord ought to govern all six NATO countries with troops in Germany and that construction should be contracted through German government agencies, that is, through indirect contracting.[16] These were all assertions of sovereignty that France had insisted upon thirty years earlier. Most of West Germany's NATO partners signed *ABG–75* in the late 1970s, but the United States resisted signing until 1982.[17]

The United States held out for several years because it continued to find advantage in the older agreements that permitted it to engage in direct design, without the intermediary of an official German agency, and some direct construction. In addition, U.S. law prohibited some of the financial arrangements accepted by the other nations. Over several years EUD's experience showed that, compared to projects designed indirectly, projects designed directly encountered more frequent delays in the German review process and required an undue number of contract modifications, leading to missed schedules and increased costs. Brig. Gen. George Kenyon "Ken" Withers, Jr., concluded that the German administration of construction was doing "a good job," and he favored signing *ABG–75*. He argued that implementing it would have a negligible effect on EUD's internal operations. On 29 September 1982, the United States,

represented by USAREUR, and the Federal Republic of Germany, represented by the Ministry of Construction, signed the agreement; it became effective on 1 October.[18]

Projects and the Process

Because managing the design and construction process from start to finish made up a major part of EUD's day-to-day work, the process itself merits review. The division processed the idea for any project through three phases: (1) planning, which shaped the idea and secured funding for it; (2) design, which translated the plan into a constructible project; and (3) construction, which turned it into mortar, bricks, and boards, giving the original idea its three-dimensional reality.

Planning

If a project idea arose in a military community, the community commander turned first to his facilities engineer, who defined the idea in relation to the community's mission and decided whether the local engineer staff had the resources to develop the concept design sufficiently to obtain congressional funding. The facilities engineer assessed the characteristics of the site in relation to the project, checked access to utilities and communications, and weighed any other economic or environmental factors that bore on the prospects of completing the project. If the local facilities engineer could not provide these basic design services, the military community turned to the next highest level, USAREUR's Directorate of Facilities Engineering (reorganized and renamed the Directorate of Engineering and Housing [DEH] in 1976). Either the facilities engineer or the DEH could also decide to bring in EUD to help with this advanced planning.[19]

If the project originated as a part of a new weapons system or some other aspect of direct combat support, it would come to EUD at the end of the concept design or advanced planning stage, because the Europe Division acted as sole agent to manage design and construction for all Military Construction, Army (MCA), projects and, upon request, for the Military Construction, Air Force (MCAF), projects. By contrast, EUD might or might not manage Operations and Maintenance, Army (OMA), projects or projects funded from other sources.

By the late 1980s, in an effort to improve customer satisfaction, EUD had instituted a predesign conference for each project as part of this planning phase. This became the initial and most critical point of interaction between the division staff and the originators of the project idea. At this meeting, the participants reviewed all documents, especially the initiating document (Department of Defense form 1391) and the project development brochure, and determined whether the scope of work accurately reflected the user's needs.[20]

When completed, the planning phase brought the project to 35 percent completion of design. The Army engineers had calculated a current

working estimate, the total cost of the project through final construction, required of any project included in the military budget presented to Congress. When Congress approved a project, it used the current working estimate as the program amount—the total funds authorized and appropriated for the project.[21] EUD also used the working estimate when describing its workload; the volume of work was generally expressed as the total working estimate of all projects currently under design.

By the mid-1980s, an EUD-organized conference had evolved to review work before USAREUR proposed a project to the Department of the Army. The DEH, the user, the designer, and the EUD representative discussed the review comments received during the planning phase, resolved their differences, and approved the concept design. The assumption was that once concept review was completed, no further changes would occur in either the operational or the functional requirements for the project.[22]

Design

The design phase, managed by EUD's Engineering Division, had its own three stages: preliminary design, which built on the earlier planning phase; prefinal design; and final design. Staff in the division might do direct design of a project, or EUD might engage an outside architect-engineer firm to execute direct design. For indirect design, either a German government agency executed the work or the agency engaged an architect-engineer firm to complete the design. In these cases, EUD monitored, verified, oversaw, and cajoled to bring the work to completion on time and within the budget.[23]

The preliminary design phase carried the project from 35 to 50 percent design. EUD screened the project again to ensure that it conformed to statutory, regulatory, and administrative requirements and qualified for the designated funding category (OMA, MCA, and others). The staff verified that a project had a clearly defined scope of work and realistic cost estimates, checked the adequacy of the funding made available for design, and calculated EUD management fee as a percentage of the design costs. The division's Technical Review Branch reviewed architectural drawings and functional layouts in detail to ensure the adequacy of electrical, mechanical, and other distribution systems. EUD review of the preliminary design stage also encompassed exterior utility systems, roads, parking areas, landscaping, and secure sources of power and water. Staff reviewed the project's completion dates and coordinated necessary changes with the user. Completion dates were critical for projects funded by OMA, because these funds had to be returned if not obligated during the fiscal year in which the project was approved.[24]

Near the end of the preliminary phase, EUD coordinated a user review of the original cost estimates to refine and check them against the approved budget. All parties then checked the preliminary design again. When EUD received the signed approval of design and cost estimates from the user, the next stage—prefinal design—began.[25]

During the prefinal stage, EUD design staff or contractors prepared detailed drawings of the facilities involved in the project. This stage also included the final calculations and structural analyses, the preparation of complete specifications, and a detailed review of costs based on actual quantitative measurements taken from the drawings. The design team again checked all elements of the design for technical accuracy and completeness. When the prefinal stage was completed, a project was 90 percent through the design cycle.[26]

During final design, the division staff prepared or monitored a contractor's preparation of construction drawings and specifications, again coordinating the work with the user. EUD also prepared any special statements relating to legal and administrative aspects of the contract as it put together the final contract documents. Staff assembled the completed drawings, the specifications, and the legal paperwork into a bid package for construction.[27]

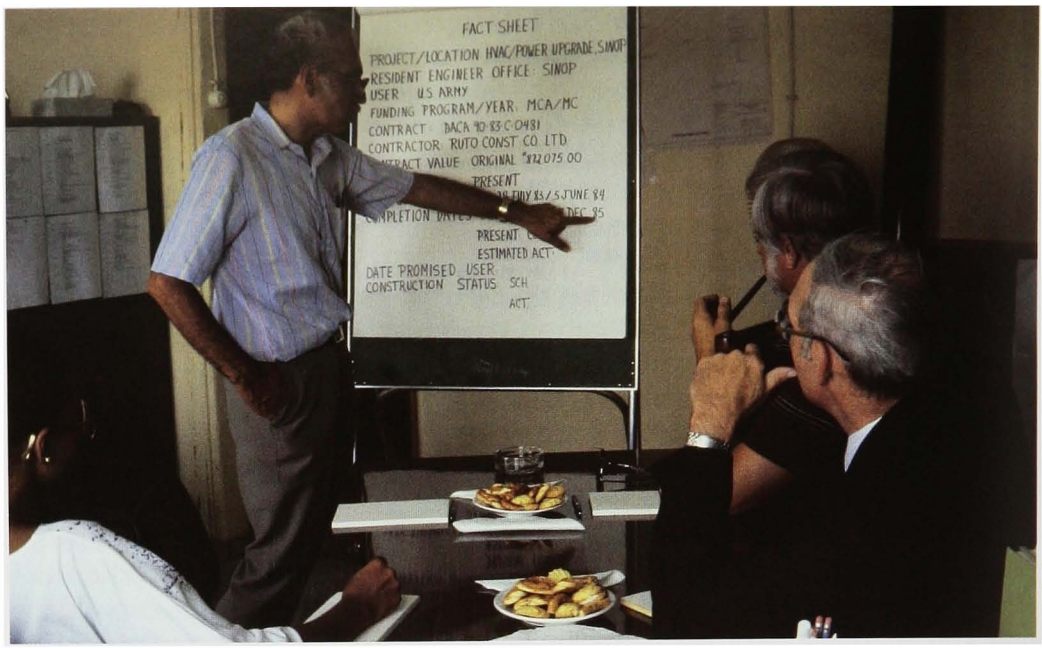
The final review conference marked the culmination of the design phase. A project manager in the Engineering Division gathered the final design documents and sent them to all the participants with notice of the date for the design conference. One last review of the design was done to ensure that the facility as designed met the operational and functional needs of the intended user.[28]

If a revised working estimate for the project exceeded the program amount appropriated by Congress, EUD had to send an explanation to Headquarters, United States Army Corps of Engineers (USACE) in Washington, which administered the appropriated funds. USACE sent EUD an authorization to solicit bids or to award the construction contract. At the moment of approval, USACE transferred to EUD 85 percent of the amount appropriated by Congress for the project. Once the division received the money and all clearances, the bid package was distributed to construction contractors qualified to handle the work.[29]

Construction

With the design phase completed and the project funds received, the construction phase began, with EUD's Construction Division monitoring the project. Much of the day-to-day work passed to the area offices, resident engineer offices, and project offices. The preconstruction conference brought together the representatives of the contractor (and principal subcontractors) and EUD area or resident engineer. The conference also frequently included representatives of the user and the community, the facilities engineer, or additional EUD personnel at the invitation of the area or resident engineer.[30]

Field personnel monitored progress at the construction site, including necessary testing, property administration, cost reporting, user liaison, record keeping, labor relations, safety, job site security, quality assurance, and personnel administration. When the volume of work



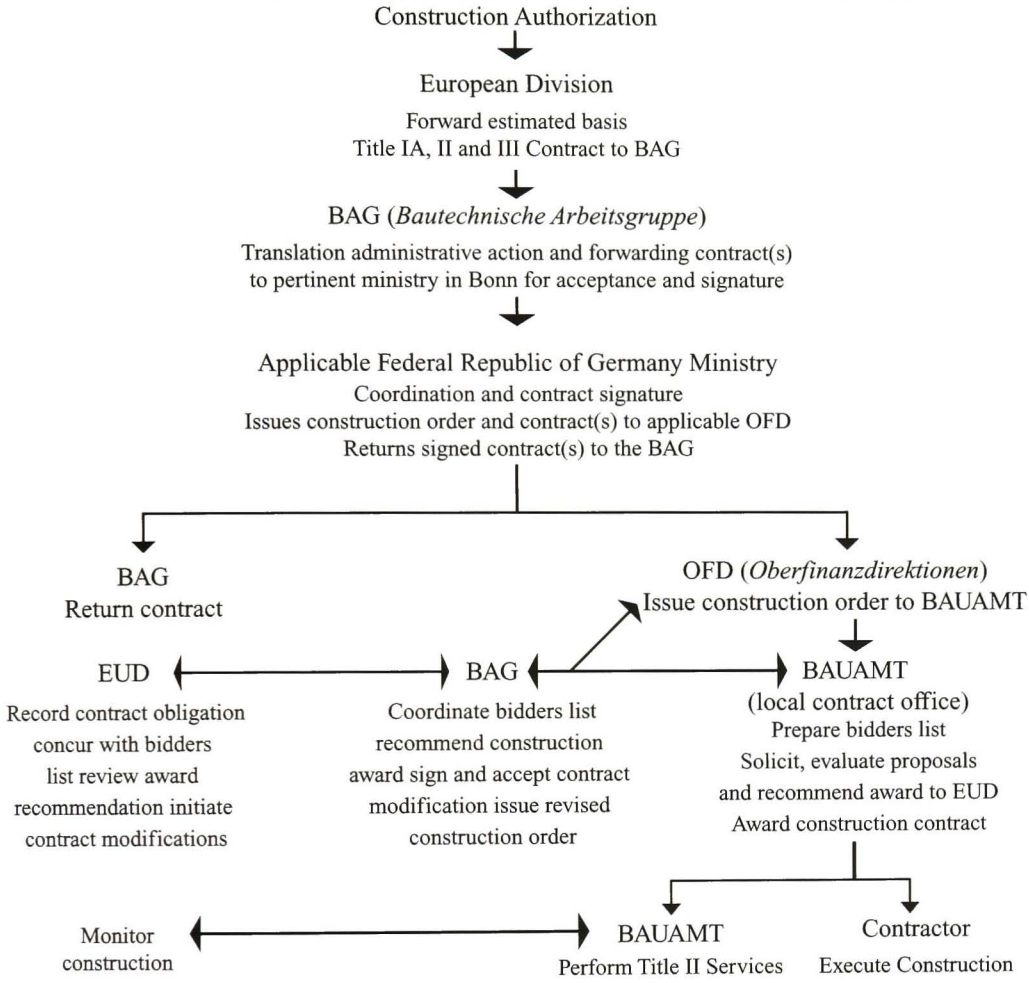
Europe Division personnel in Sinop, Turkey, monitored each construction project as it progressed.

or the remoteness of the site warranted, the Europe Division opened a project office at or near the job site. Throughout the construction phase, staff in the Construction Division in Frankfurt provided an array of support and technical expertise to solve the more difficult problems.[31] Monitors ensured that the contractor stayed on schedule, adhered to the contract price, and executed the plan's special and general conditions and specifications. Field office personnel also tracked funds and negotiated changes, within limits, while they forwarded to Frankfurt any changes that exceeded their authority.[32]

The Construction Division managed periodic inspections, controlled funds, and administered the contract to ensure that the contractor delivered high-quality work on time and within budget. Headquarters staff and field personnel worked in concert to conduct the prefinal inspection of the construction site before turning the facility over to the user. They also assessed and acted upon any deficiencies identified in the final inspection.[33]

Because the indirect method of contracting put a bureaucratic layer between EUD and the executor of the work, EUD had little leverage to delay payment to the contractor or to cancel the contract. The indirect method of contracting in the Federal Republic of Germany also fostered opportunities for delay. (*Chart 12*) The average time involved in seeing an indirect contract to completion was 24.5 months.[34] (*See Chart 13.*)

Chart 12: Indirect Contracting Process in the Federal Republic of Germany

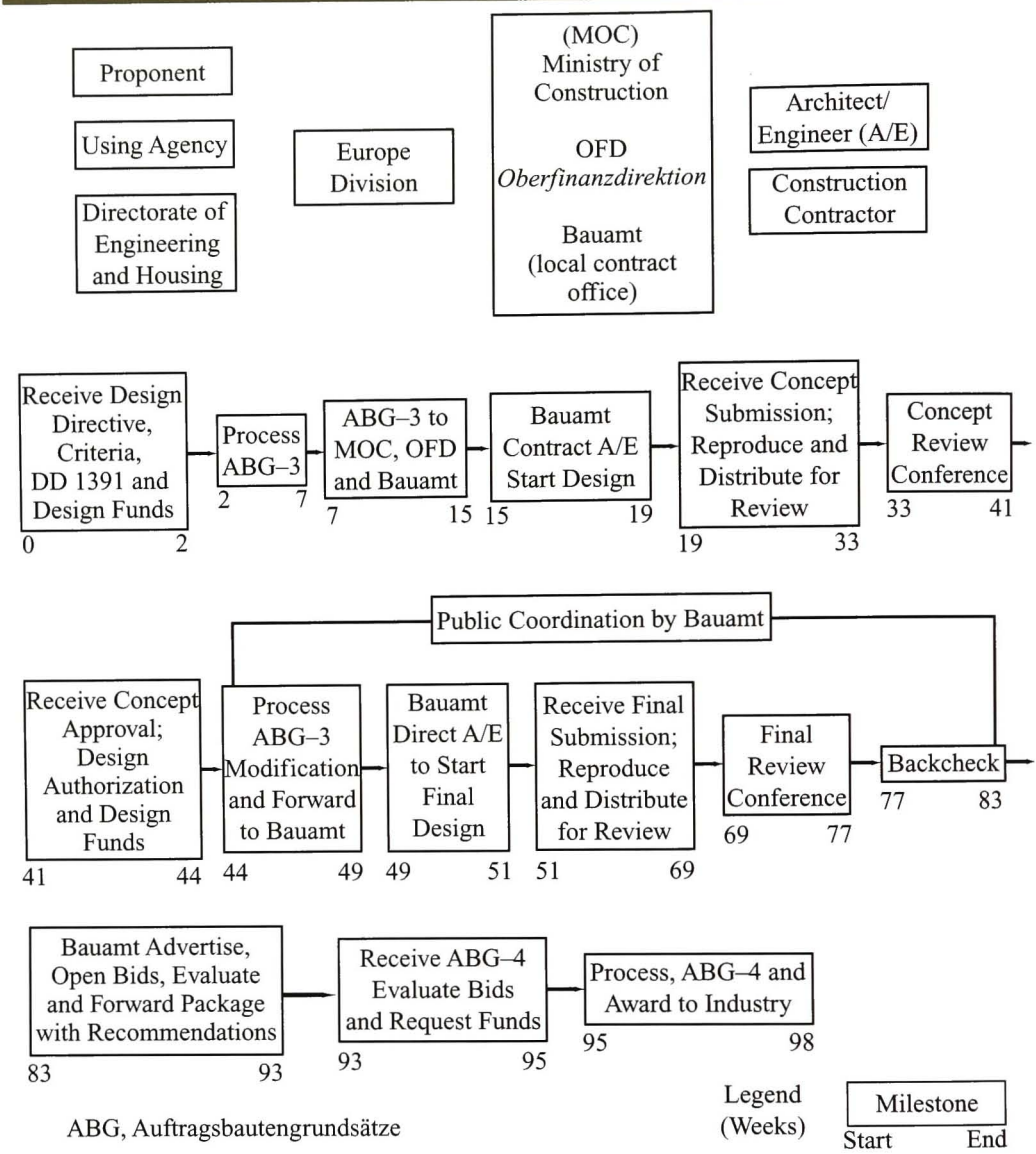


Value Engineering

In addition to guiding a project through the various phases of design and construction, EUD administered a value-engineering program. Value engineering is a systematic approach to reducing costs in a project without changing its original function or scope. Designs for a project selected for value engineering might be reviewed by an in-house team or examined by an architect-engineer firm to see how savings could be achieved by changing aspects of the design or construction.[35]

In 1974, when the Europe Division was established, regulations set out by the Office of the Chief of Engineers located the value engineering function in the division's Executive Office. Although value engineering was applied to direct design projects during the 1970s, the German construction industry never thought it necessary, asserting that they did it "in the

Chart 13: Indirect Method of Contracting and Project Milestones



normal course of design." In fiscal year 1983 the Office of the Secretary of Defense, concerned about the rising costs of military construction, set a goal to save 2 percent of the total budget for military construction through value engineering. The Pentagon increased the goal to 5 percent in fiscal year 1984 and to 6 percent in fiscal year 1986.[36]

The committee established to oversee the value engineering program at EUD selected projects for examination that promised potential savings. This committee, headed by the deputy commander, tried to apply value engineering during the design phase of a project, before the concept review meeting. The value engineering report went to the original designer, who

reviewed it and incorporated appropriate changes into the design. During the construction phase, the contractor could initiate a value-engineering change proposal, documenting an alternate and more economical solution or method of accomplishing specific parts of the project. If the proposal was accepted, the contractor received 55 percent of the net savings.

In fiscal year 1984 the chief of engineering, Joe G. Higgs, took over responsibility for value engineering and located it in the Project Management Branch. During fiscal years 1985 to 1987, EUD doubled the number of its value-engineering studies from twenty-four to approximately fifty annually. More savings through the application of value engineering translated into more construction projects, because additional projects could be authorized from the savings on previous projects. In 1989, to conform to USACE regulations, the division engineer returned value engineering to the Executive Office.

The elements of design and construction in EUD were long, laborious, and labor-intensive in ways peculiar to the European setting. The Engineering Division's Project Management Branch tracked each project through the design phase, at which point responsibility for the project passed to the Construction Division. Effective communication between the two divisions was crucial to the process but not always achieved. People who worked in the Construction Division frequently complained that designers took too little account of constructibility and failed to incorporate into subsequent designs the lessons learned during construction. People in the Engineering Division claimed that those in construction lacked imagination, flair, and creativity.[37]

Projects and Funding

Money for design and construction, or for other technical activities such as design review or advice on master planning, came from one of three sources: the United States government, NATO, or the governments of the host nations. Each of these lines of funding supported a variety of programs.

Tracking the funds for any one project was complicated because, within legal limits prescribed by the funding authorization, EUD was able to combine funds from several sources to support projects. Hospital renovations, for example, used dollars from MCA and OMA appropriations, Deutschmarks from the Modernization of United States Facilities (MOUSF) program, and (or) other host-nation funds. Some funding arrangements were straightforward, such as MCA programs within USAREUR. Others were more convoluted: For certain facilities the United States initiated construction and then sought compensation from NATO, so that NATO monies became mixed with MCA funds.[38]

U.S. Funding

U.S. funds included several categories of monies appropriated by Congress: Military Construction, Army (MCA); Minor MCA (MMCA);

Table 6

Military Construction, Army, Annual Allotments
Fiscal Years 1975–1986

Fiscal Year	Program Funding ($ million)	Fiscal Year	Program Funding ($ million)
1975	$ 31.641	1981	201.0
1976	58.188	1982	294.0
1977	59.995	1983	262.0
1978	185.675	1984	313.0
1979	213.875	1985	255.0
1980	113.0	1986	337.0

Military Construction, Air Force (MCAF or MCP); Military Construction, Navy (MCN); Operations and Maintenance, Army; Air Force family housing; Army family housing; Department of Defense contingency funds; and Department of Defense dependent schools. EUD also worked with nonappropriated funds and commissary surcharge monies. This list is suggestive, not exhaustive.

EUD managed all work in Europe funded under MCA (*Table 6*) and all work funded under the agreements with Germany to pay the costs of U.S. forces protecting their territory. During the 1970s USAREUR's entire allotment of MCA money averaged less than $50 million annually.[39] Still, within these limits EUD workload increased significantly between July 1975 and late 1977. Design workload, expressed as the programmed cost of building the projects in design, went from $279 million and 246 projects in fiscal year 1974 to about $430 million and 554 projects in fiscal year 1975, then jumped to $1.3 billion by late 1977. The largest dollar increases came in work funded by MCA, but work to support facilities (OMA and family housing rehabilitation) supplied the greatest number of projects.[40]

Between May 1976 and August 1978, EUD completed $34.4 million of MCA construction.[41] By the end of the decade, USAREUR's annual MCA allotment had increased to over $200 million. EUD workload increased accordingly, and it continued to increase during the 1980s. The trend was not an uninterrupted progression, however; in the summer of 1979 EUD's division engineer, Brig. Gen. Drake Wilson, notified the chief of engineers, Lt. Gen. John Morris, that his "most serious problem was the current shortage of MCA design funds."[42]

In addition to projects such as ammunition storage and medical facilities, MCA funds paid for facilities modernization (the dollar-funded pro-

gram that followed MOUSF), pollution control, storage of weapons and equipment, missile sites, energy production, training and training facilities, weapons facilities, physical fitness, barracks, and projects related to the combat mission of the forces. EUD also executed work for the Air Force and the Navy with funds appropriated for MCAF and MCN.

Funds allocated for OMA financed alterations, repair, and maintenance. Appropriated annually, OMA funds had to be obligated in the same fiscal year, and their use was restricted to specific purposes. During the 1970s, OMA funds were limited to new construction or alterations costing no more than $75,000 and to repair projects costing less than $300,000, as long as the costs of repair did not exceed half of the cost of replacing the facility. The secretary of the Army had to approve repair projects involving new construction that exceeded $300,000 and maintenance projects that exceeded $300,000. Practically speaking, such projects came within the approval authority of the community commander, because they were routinely approved in Washington.[43] New programs initiated in the late 1970s, including maintenance, repair, and improvement (discussed in *Chapter 12*), increased EUD's flexibility in using OMA funds.

MCA, MCAF, MCN, and OMA funds provided the largest part of EUD's regular funding from dollar appropriations. Dollar funding for programs other than MCA and OMA was less predictable, and these programs were therefore less significant in EUD's early years. Family housing, facilities modernization, schools, and other quality-of-life projects became a major focus of the division's attention only in the 1980s. OMA and German-funded projects provided the basic workload during the first two years of the Europe Division.[44]

Host-Nation Funds

To cover some of the costs of stationing U.S. troops as a part of the NATO mutual defense pact, countries provided "host-nation funds."[45] By far the most important country for the support of USAREUR's combat mission was the Federal Republic of Germany. Since the end of the occupation in 1955, the West German government had provided various forms of financial support to the United States to offset the costs of stationing troops in the Federal Republic of Germany. The MOUSF program, for example, was paid for through the agreements between the United States and the Federal Republic of Germany.[46] (*See descriptions of MOUSF projects in Chapters 6 and 10.*)

Another program, Alternate Construction, was derived from practices begun before the end of the occupation. A series of bilateral agreements dating from the mid-1950s to the mid-1960s formalized the program. In exchange for a facility occupied by U.S. forces, the government of the Federal Republic would construct an equivalent facility at a site agreeable to the United States. When the Germans wanted a facility returned, negotiations for an alternate facility revolved around the scope of work, the quality, and the location, but not the cost. German agencies and contrac-

NATO provided funds to support the Common Infrastructure Program, which included this operations building in Incirlik, Turkey.

tors did all the design work as well as the construction. USAREUR provided OMA funds to cover EUD's costs of managing the program.[47]

NATO Funds

EUD had little to do with NATO construction when the U.S. forces did not use the facilities. When the United States was designated primary or exclusive user, the division reviewed plans and monitored construction for the project as requested by USAREUR or the United States Air Forces in Europe. NATO funding supported a diversity of construction projects and programs as a part of the common defense mounted by the countries of the Atlantic alliance. The largest category of NATO funds supported the Common Infrastructure Program, which financed such undertakings as airfields; facilities for petroleum, oil, and lubricants (POL); naval bases; communications facilities; navigational aids; training facilities; headquarters facilities; warning installations; surface-to-air and surface-to-surface missile sites; ammunition storage sites; forward storage sites; and reinforcement support.[48]

Projects in these categories could be funded in three ways. First, they could be funded solely by NATO under its annual budget, where an allotment is designated as a *tranche* in French and translated as a "slice" in English. These annual NATO allotments for construction began in 1950 and were numbered consecutively.[49] The NATO program trends and slice num-

bers for fiscal years 1975–1981 are given in *Table 7*. Second, projects could be conjunctively funded; that is, the United States contributed funds to provide for features that NATO criteria would not allow. NATO criteria, drawn with wartime conditions in mind, were exceedingly austere. Because U.S. troops used the facilities extensively in peacetime, the United States upgraded NATO projects to provide more amenities. When an American project and a NATO project shared common features, usually utilities, the costs of such features were shared based on a ratio of projected usage. A project might have both conjunctive funding and cost sharing.[50] Third, projects could be prefinanced; that is, the United States put up the money in the expectation that NATO would reimburse the advance. To ensure recoupment (the word used by both NATO and the United States), EUD personnel maintained detailed records during the project to satisfy NATO's accounting requirements. The Europe Division continued the Recoupment Section established by the Engineer Command. The recoupment process was tedious, and there was no assurance that NATO would approve repaying the money. EUD received special funding from Congress to pay the overhead in monitoring projects funded by NATO or prefinanced by the United States.[51]

Table 7

North Atlantic Treaty Organization (NATO) Annual Allotments
Fiscal Years 1975–1981

NATO Slice	Fiscal Year	Program Funding ($ million)
26	1975	$ 26.0
27	1976	10.7
28	1977	13.5
29	1978	57.8
30	1979	16.8
31	1980	287.3
32	1981	277.5

Construction Workload

The execution of EUD construction between May 1976 and August 1978 is summarized in *Table 8*.[52] In this 28-month period, fiscal year statistics were skewed because the government created a fifth fiscal quarter (FY 7T, 1 July to 30 September 1976) when it shifted the beginning of its fiscal year from 1 July to 1 October. Nonetheless, the table represents EUD's activity in the years before the increased tempo of the 1980s.

The first seven programs listed, funded by U.S. dollars appropriated by Congress, constituted almost 60 percent of EUD construction. Modernization of U.S. Facilities, Alternate Construction, and the garrison in Garlstedt were funded by the Federal Republic and represented another 35 percent. NATO funded the A Priori program, and the government of the Shah of Iran paid for work in Iran.[53]

It is difficult to compare the workload of the Europe Division for 1976–1978 with the EUD construction in fiscal year 1984 (*see Table 9*) because the

Table 8

Europe Division Construction Execution
May 1976–August 1978

Program	Number of Projects	Program Funding ($ million)	Percent of Total
Military Construction, Army	40	$34.4	15.1
Minor Military Construction, Army	17	2.76	1.2
Operation and Maintenance, Army	23	5.18	2.3
Military Construction, Air Force	32	82.0	36.0
Military Construction, Navy	11	7.1	3.1
Family Housing	27	3.4	1.5
Other	10	0.9	0.4
Modernization of U.S. Forces	59	44.9	19.7
Alternate Construction	7	8.0	3.5
NORTHAG [Garlstedt]	3	26.0	11.4
A Priori	1	3.2	1.4
Iran	7	10.0	4.4
Total	237	$ 227.84	100

Adapted from "EUD in Perspective, 1976–1978."

division did not use comparable statistics. Only three categories—MCA, MCAF, and OMA—remain the same. As a result, the figures indicate trends and significant shifts in the quantity of work at hand; they cannot be a precise measure of specific categories of work from one period to the next.

By 1984 the volume of work handled by EUD had increased dramatically. In construction placement, the total dollar value for the first nine months of 1984 ($269 million) exceeded the total value for the twenty-eight months from May 1976 to August 1978 ($227.8 million). For the entire fiscal year of 1984, construction placement totaled $403 million.[54] The share of funding for construction placement coming from dollar appropriations (72.8 percent) rose sharply. The NATO share for 1984 totaled $255 million. Host-nation funding does not appear in any identifiable category in the figures for 1984.

Projects and Area Offices

In addition to analyzing the types of contracts and sources of funds, the work of the Europe Division may also be reviewed in terms of where

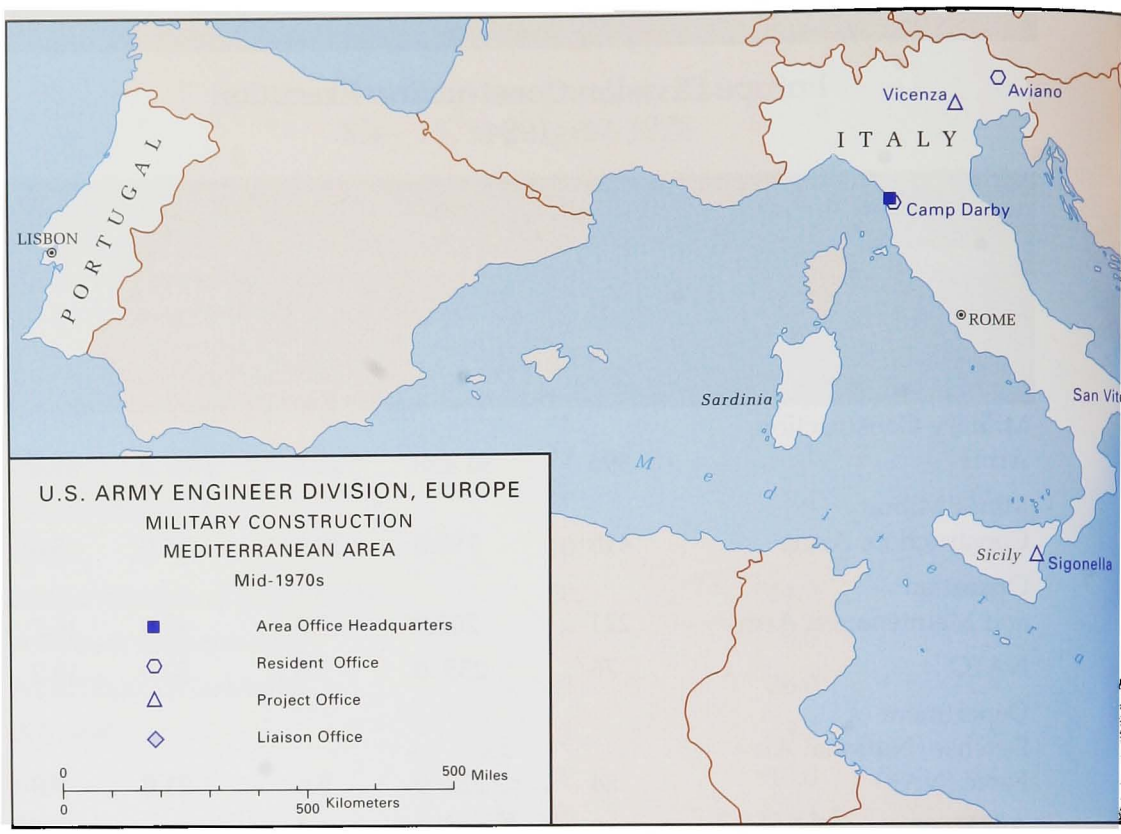
Table 9

Europe Division Construction Execution 1984

Program	Number of Projects	Design Workload of all Programs Fiscal Year 1984		Construction Placement (Fiscal Year 1984 to June 30 Only)	
		Program Funding ($ million)	Percent	Program Funding ($ million)	Percent
Military Construction, Army	396	$1.428	41.8	$127.0	47.2
Minor Military Construction, Army	418	795.0	23.3	15.0	5.6
Operation and Maintenance, Army	221	202.0	5.9	45.0	16.7
NATO	76	255 .0	7.5	52.0	19.3
Department of Defense/National Air Force (NAF)	84	227 .0	6.6	21.0	7.8
AFFH	2	63.0	1.8	--	--
AFH	112	296.0	8.7	--	--
FH	--	--	--	9.0	3.4
Miscellaneous	45	151.0	4.4	--	--
Total	1,354	$3.417	100.0	$269.0	100.0

Source: Engineer Studies Center, "U.S. Army Engineer Division, Europe (EUD), Organization Study," April 1985, pp. 7–11.

the projects were located. In 1974 EUD territory was entirely within continental Europe, and the vast majority of work was in the Federal Republic of Germany. EUD initially established area offices in Stuttgart, Frankfurt, and Kaiserslautern, the cities in which USAREUR maintained headquarters for its three major commands—VII Corps, V Corps, and the 1st Support Brigade (later the 21st Support Command), respectively. Each area office maintained a resident engineer office in its home city and established other resident offices to serve clusters of military communities. In 1974 the division had resident engineer offices at Bad Kreuznach, Giessen, Nuremberg, Würzburg, Augsburg, Bitburg, and Heidelberg.



Map 19

From this basic structure of field offices, EUD opened and closed area offices, resident offices, and project offices as the construction workload shifted.[55] The Northern Area Office opened in 1975. Located first in West Germany, it soon moved to Hoensbroek, Netherlands, just across the border from Aachen, West Germany. The Northern Area Office managed work in Belgium, the Netherlands, Luxembourg, and northern Germany, a geographic area equal to the combined area of all the other area offices in Germany.[56]

In February 1976 EUD assumed the responsibility for USAREUR and NATO construction in Italy, Greece, and Turkey. EUD took over office space from the Mediterranean Division at Camp Darby near Livorno, Italy, and incorporated some staff to create the Mediterranean Area Office. In addition to a resident office at Camp Darby, EUD established a resident office in Aviano and project offices in Vicenza, San Vito, and Sigonella in Italy, as well as a resident office in Athens, Greece, and a project office in Iraklion on the island of Crete. In Turkey, EUD inherited a resident office at Incirlik Air Base near Adana, the TUSEG Liaison Office in Ankara, and a project office in Sinop on the Black Sea.[57]

Although Iran was outside its defined geographic area of responsibility, EUD also accepted fully reimbursable construction work in Tehran.[58] The

Mediterranean Division had handled work in Iran in the 1950s and 1960s, and Brig. Gen. Louis W. Prentiss, Jr., commander of the Europe Division in the mid-1970s, accepted the turnover of responsibility to the division, citing this work as an example of EUD's ability to respond to challenges. In May 1976 the work involved only design, but within two years EUD had placed over $10 million in construction funded by the Iranian government.[59]

Incorporating several Mediterranean countries into EUD in 1976 marked the last major addition of territorial responsibility for the division. In 1980 responsibility for construction in Italy and Greece passed to the Navy, but within two years the Navy asked EUD to reassume management of construction in those countries.[60]

Volume of Work in the 1970s

Throughout the 1970s EUD's five area offices supervised a growing number of construction projects for the U.S. military. The Mediterranean Area Office had the lightest construction load but a fairly large staff because of its far-flung resident offices and the requirement to retain locally hired Italians when the Mediterranean Division was inactivated. (*Map 19*) In 1980 its construction placement was less than one-eighth that of the Southern

Area Office in Stuttgart, which had the largest placement, and one-fourth that of the Northern Area Office. The unevenness of work for the area offices is evident from the construction placement for fiscal years 1979 and 1980.[61] (*Table 10*)

This unpredictability made planning and manpower assignments very difficult. For fiscal year 1979, for instance, the Southwest Area Office had projected construction placement of $52 million; the office constructed only half that amount because the Air Force shifted projects to NATO.[62]

Table 10

Construction Placement by Area Office Fiscal Years 1979 and 1980

Area Office	Fiscal Year 1979 ($ million)	Fiscal Year 1980 ($ million)
Northern	$36.6	$32.1
Central	38.3	58.5
Southwest	25.8	48.5
Southern	61.5	60.5
Mediterranean	8.8	8.2

Projects in the 1980s

As construction placement increased, EUD headquarters recognized bottlenecks in the decision-making process. In 1980 EUD reorganized the Construction Division, redefining the relationship between area and resident offices and headquarters and establishing additional area offices in Nuremberg and Würzburg. A year later the division increased manpower and administrative support in the area offices and upgraded both TUSEG and Heidelberg to area offices. Under the influence of John Blake, chief of construction after 1981, the trend toward decentralization and increased support for the field continued as construction placement increased during the 1980s.

Throughout most of the 1980s the Frankfurt Area Office led other area offices in construction placement, with a full range of projects for V Corps military communities. In 1986 Frankfurt had as much work as several of the other area offices combined, but by the late 1980s its workload had decreased to $60 million annually.

In 1984 the Stuttgart Area Office had a relatively small staff of between twenty-eight and thirty-two people, some of whom worked in the area office and others in the Augsburg Resident Office. In the next four years construction placement jumped from around $24 million to $60 million annually, and Stuttgart opened a resident office in Garmisch. In 1989, when work in the Heidelberg area declined, that area office was downgraded to a resident office and put under the Stuttgart Area Office.

In the 1980s as much as 80 percent of the Kaiserslautern Area Office workload was for the Air Force. With resident offices in Bitburg and Hahn, this office served six air bases—Ramstein, Sembach, Zweibrücken, Spangdahlem, Hahn, and Bitburg—as well as Army installations in Kaiserslautern, Pirmasens, Worms, and Zweibrücken. In 1984 the Kaiserslautern Area Office's construction placement was $36 million; in

The Nuremberg Area Office supervised the construction of Pinden Barracks in Nuremberg, Germany.

1987 that amount more than doubled. In 1989 construction placement topped $100 million.

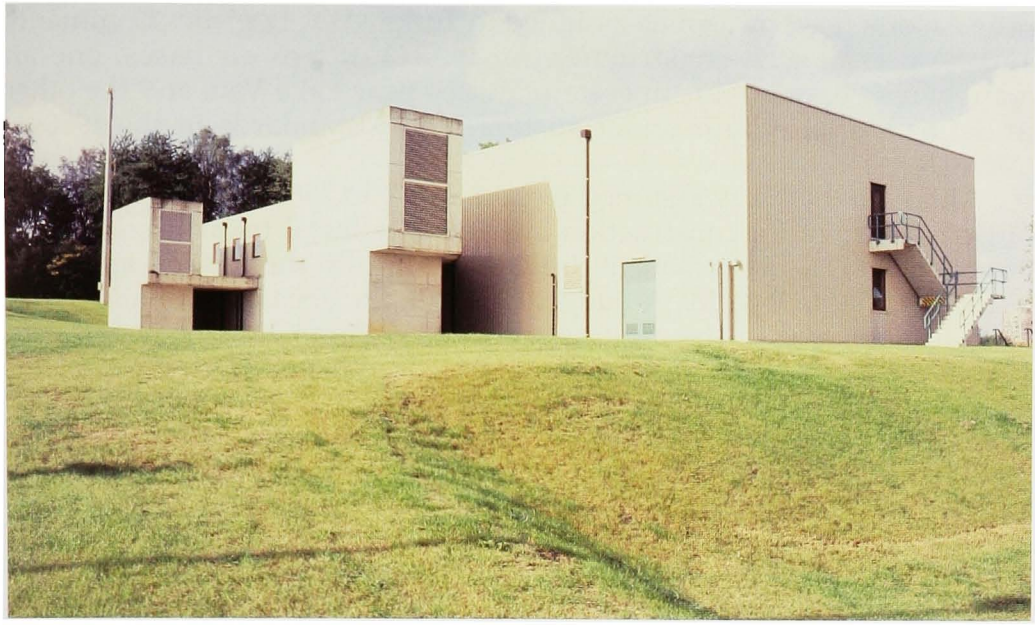
The Nuremberg Area Office's major customers were the 1st Armored Division, 2d Armored Cavalry Regiment, Seventh Army Training Center, and Department of Defense Dependent Schools. (*See Map 20.*) This office handled the programs to upgrade the firing ranges in Grafenwöhr and construction at the training areas of Hohenfels and Vilseck. In 1985 construction placement was $68 million; in 1986 it was $85 million; and by 1989 it had risen to over $100 million. Staff increased from thirty-eight in 1985 to eighty in 1989. To manage this construction, the area office was organized with resident offices in Nuremberg and Vilseck and project offices in Ansbach, Nuremberg, Bamberg, Grafenwöhr, Vilseck, and Hohenfels.[63]

The EUD office in Würzburg supported the 3d Infantry Division and all of its subelements. The office also handled construction projects associated with the Wildflecken Training Area and supported an airfield in Giebelstadt. In 1980 EUD upgraded Würzburg from a resident to an area office. The Würzburg office had eleven staff members; the number increased to twenty-three by 1982 and continued to rise until 1990. EUD also established resident offices in Schweinfurt and Würzburg and project offices in Wildflecken and Aschaffenburg.

The Northern Area Office, the only area office to retain its geographic name after the reorganization of 1980, continued through the 1980s to

Map 20

serve air bases in the Benelux countries. When the Ground Launched Cruise Missile program was introduced, construction was extended to air bases in Florennes, Belgium, and Woensdrecht, Netherlands; in 1986 resi-



The Northern Area Office was responsible for this headquarters building at an air base in Florennes, Belgium.

dent offices were established at both bases. The volume of work for fiscal year 1987, $79 million in construction placement, was 172 percent higher than the workload for fiscal year 1986.[64] In 1988 the Rheinberg Resident Office opened, and a project office for the Supreme Headquarters, Allied Powers Europe, opened in February 1989. In the late 1980s the Northern Area Office extended its territory when the Navy asked EUD to oversee construction of two NATO-funded contingency hospitals in northern Norway. Norway would not allow EUD to establish an office near the construction, so Northern Area Office personnel handled the projects from Hoensbroek on temporary duty assignments.[65]

In Turkey, the construction program that began with a single contract in 1980 grew rapidly as the Army, Air Force, and NATO sought to improve living and working conditions for soldiers and airmen and to strengthen Turkey's ties to North Atlantic defense. Brig. Gen. James W. Ray, the commander of the Europe Division in the mid 1980s, observed, "From the overall perspective of the Europe Division, the construction program in Turkey was important, and more important than the amount of money would indicate."[66] The construction program in Turkey had four components: (1) upgrades of MCA facilities at five remote sites (Erzurum, Corlu, Ortakoy, Izmit, and Cakmakli) used by the Army group headquartered outside of Istanbul; (2) construction to improve working and living conditions for the Army intelligence command in Sinop on a spit of land jutting into the Black Sea; (3) construction for the Air Force at the main operating air base of Incirlik near Adana and at a second smaller air base

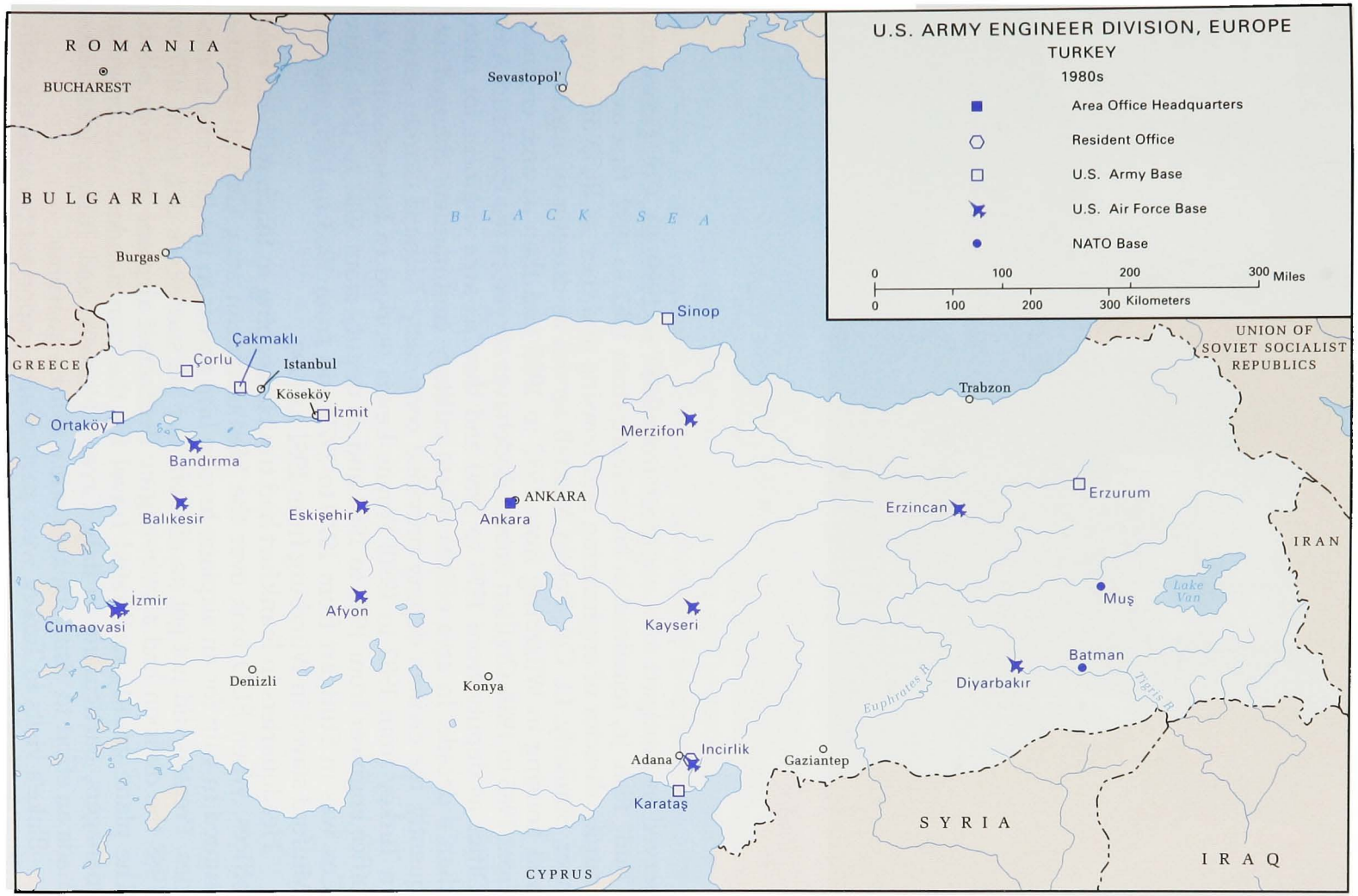
near Ankara used by airmen assigned to Turkey-U.S. Logistics Command; and (4) prefinanced construction for NATO of two air bases, one an entirely new base in Mus in eastern Turkey near Lake Van, and the other in Batman, a base built under austere NATO standards in the 1950s.[67] (*Map 21*)

Although the Navy assumed responsibility in 1980 as the Department of Defense agent for construction in Greece, political turmoil and public objections to U.S. bases made it difficult to work on the projects approved in the fiscal year 1984 MCA budget. The U.S. European Command asked EUD to help, and in the autumn of 1985 William Camblor began new negotiations that led to an agreement signed with the Greek government in the summer of 1986. Camblor negotiated direct design, but all construction remained indirect.[68] In the late 1980s the Greece Resident Office monitored work on seven special warehouses under programs designed to make stored ammunition secure against theft by terrorists.[69]

Concerns in the Field

Maintaining continuity of supervision in the field concerned EUD leaders. Although lengthy construction projects might have three or four American civilian project engineers, the locally hired employees (Germans, Turks, Greeks, and others) helped provide continuity. Military officers received three-year assignments as area engineers, although several serving in the 1980s arranged to stay longer. Lt. Col. Lloyd Colio

Europe Division construction sites in Turkey included Sinop on the Black Sea.


U.S. ARMY ENGINEER DIVISION, EUROPE
TURKEY
1980s
Area Office Headquarters
Resident Office
U.S. Army Base
U.S. Air Force Base
NATO Base
0 100 200 300 Miles
0 100 200 300 Kilometers
ROMANIA
BUCHAREST
BULGARIA
BLACK SEA
Sevastopol'
Burgas
Sinop
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Istanbul
Köseköy
İzmit
GREECE
Ortaköy
Bandırma
Balıkesir
Eskişehir
ANKARA
Ankara
Merzifon
Trabzon
UNION OF SOVIET SOCIALIST REPUBLICS
Erzincan
Erzurum
IRAN
İzmir
Cumaovasi
Afyon
Kayseri
Lake Van
Muş
Batman
Diyarbakır
Euphrates R.
Tigris R.
Denizli
Konya
Adana
Incirlik
Gaziantep
Karataş
SYRIA
IRAQ
CYPRUS

Map 21

Europe Division's acquisition of an airplane facilitated staff travel to and from the division's far-flung offices. John Blake, Chief of Construction, is at right.

served as Stuttgart area engineer from 1984 to 1990. Lt. Col. Grosvenor "Bud" Fish, Jr., remained in Nuremberg from 1982 to 1992, first as a community director of engineering and housing and then as EUD area engineer. Similarly, Lt. Col. Robert Mentell served as director of engineering and housing in Würzburg from 1982 to 1985 and then as area engineer from 1985 to 1988. Civilian Robert Rodehaver served in the Frankfurt Area Office as deputy from 1974 to 1980 and then as area engineer for more than a decade. In area offices where military commanders changed frequently, the civilian deputy provided continuity: Richard Grimm served in Turkey from 1982 to 1990; Wayne Lewis worked in Kaiserslautern as office engineer from 1975 to 1980 and as deputy from 1982 to 1990; Dave Cox was in Stuttgart from 1977 to 1979 and from 1983 to 1991; and Jim Mulford stayed in Würzburg from 1981 to 1990.

Headquarters in Frankfurt had trouble keeping in touch with the field offices. When EUD took over the Mediterranean area, General Prentiss argued in vain for an airplane to give him access to the far-flung territories. Prentiss did not get an aircraft, but his successors did; from 1976 to 1988 the division had a twin-engine Beechcraft airplane and four pilots. The plane greatly facilitated travel for the commanders and program managers, particularly to Italy, Greece, Norway, and Turkey. John Blake made an effort to visit each area office at least quarterly.

Blake's visits to Turkey were particularly important because the difficulties the TUSEG staff encountered when communicating with Frankfurt

could be overwhelming.[70] Military telephone service was uncertain and commercial service no better. Computers with modems were installed during the mid-1980s, but only when EUD introduced facsimile machines in the area office and in each resident and project office in the summer of 1989 did communications for the staff in Turkey become satisfactory.[71] Veronica Rovero, an engineer who had worked at headquarters in Frankfurt before her tour in Turkey, observed that "the fax serves as both instant communications and an answering machine, since the one guy in the field is usually out of the office. Being able to send a message via fax saves making numerous unanswered phone calls."[72]

Technology could not, however, change attitudes or alter feelings. Overall, the staff in area, resident, and project offices felt removed from the activities, tensions, and changes in Frankfurt. For many, work in the field meant action, excitement, independence, and satisfaction. But they also experienced isolation and, in some instances, hardship conditions.[73] Veronica Rovero articulated the feelings of frustration felt by some EUD employees in the field: "The Phillips Building *is* EUD for those people. They forget about the people out on the fringes who are struggling, floundering, and doing the best that they can under whatever circumstances."[74]

Throughout the organizational changes, fluctuations in funding, and turnover of personnel, the mission of the Corps of Engineers in Europe remained unchanged. To accomplish its mission, EUD needed people to move the projects through design to construction and to monitor contractors in half a dozen languages. The range and array of programs and projects managed by the Europe Division was vast.

10

PROGRAMS AND PROJECTS

The changes in the management and organization of the engineer resources that led to the creation of the Europe Division (EUD) in 1974 did not halt work on projects begun under the Engineer Command. EUD continued to execute the Modernization of United States Facilities (MOUSF), funded by the Federal Republic of Germany; the aircraft shelter program begun as TAB VEE (Theater Air Base Vulnerability Evaluation Exercise); and work for the U.S. Navy in Sigonella, Sicily, inherited from the Mediterranean Division. During EUD's early years these holdover programs constituted a substantial part of the division's workload. Late in the decade new programs began to emerge to improve the security of stored ammunition (the Long Range Security Program, or LRSP) and to position materiel to support rapid deployment and combat readiness (Pre-positioned Organizational Materiel Configured to Unit Sets, or POMCUS).

Holdover Projects

Just as the engineering mission remained constant through the transition in 1974 from the Engineer Command (ENGCOM) to the Europe Division, so too did the execution of programs and projects. Programs and contracts initiated under ENGCOM or transferred from the Mediterranean Division continued under the Europe Division. Only later in the decade did new programs begin to dominate EUD's work.

Modernizing U.S. Facilities

The transition from the Engineer Command to the Europe Division slowed progress on the MOUSF program, which the Federal Republic of Germany had first funded in December 1971. In April 1974, in ENGCOM's last weeks of existence, the United States and West Germany signed a second MOUSF agreement. To supervise and administer the 1971 MOUSF projects, ENGCOM had depended on Military Construction, Army (MCA), funds appropriated by Congress in 1972. The Engineer

Command had no similar appropriation for the projects envisioned under the 1974 MOUSF agreement. Moreover, the projects in the first phase had advanced quickly because ENGCOM had a backlog of projects already designed under its Stem to Stern program for the rehabilitation of barracks. With the reshuffling of personnel and resources that accompanied the transition from ENGCOM to EUD, the funds that had supported both design and supervision for the MOUSF program, taken from USAREUR's Operations and Maintenance, Army (OMA), budget, either ran out or remained tied up in ENGCOM accounts. These factors threw the administration of work under MOUSF into question.[1]

In the summer of 1974 the administrative home of MOUSF remained undecided. Renovation of barracks and mess halls was closely akin to the maintenance and repair work discharged by the facilities engineers whose chain of command shifted in mid-1974 from ENGCOM to USAREUR community commanders. EUD's first commander, Brig. Gen. James C. Donovan, and his successor, Brig. Gen. Louis Prentiss, Jr., both argued forcefully that the Europe Division should supervise the MOUSF work. Only EUD had the personnel and structure to perform construction agency services, including estimates, technical review, and engineering assistance. The facilities engineers and USAREUR had little capacity in these areas.[2]

When ENGCOM began its work on MOUSF in the summer of 1972, it received authority to requisition forty engineer officers assigned to the 24th Engineer Group to serve as MOUSF project officers. By late 1974, because the work had slowed down so substantially, only twenty-six MOUSF officers remained active on the projects. To support the MOUSF projects, EUD needed about forty clerical and technical personnel in resident offices and at least twenty more in area offices and headquarters, but the division had very few people at its disposal.[3] The tight staffing situation limited the division's ability to initiate work on the projects scheduled for the second MOUSF program, and just five new MOUSF design contracts were awarded in its first months.[4]

In October 1974 EUD's situation improved when the Federal Republic agreed to pay for secondary services that the division provided on other construction projects. The division could then use these monies to pay for design for MOUSF projects. EUD's principal negotiator in this, as in all discussions of MOUSF with the Germans, was the assistant division engineer for intergovernmental affairs, William E. Camblor. The deal that Camblor negotiated was so delicate that it "cannot be put in writing because of the political aspect, i.e., the FRG [Federal Republic of Germany] will not pay any direct cost for the forces because it smells of occupation." Indeed, the agreement was so politically sensitive that Prentiss chose to eliminate the detailed description of it, including the phrase just quoted, from his report to the chief of engineers, Lt. Gen. William C. Gribble, Jr., in October 1974.[5]

The extent of USAREUR's support for MOUSF remained unclear throughout 1974. Prentiss did not learn until December that the project

officers previously assigned would continue to be available to EUD, "subject to Department of Army personnel policies."[6] In March 1975, under pressure to "free" officer spaces, USAREUR began to reduce by attrition the number of engineer officers assigned to MOUSF. Instead of providing personnel to supervise this construction, USAREUR proposed to pay EUD, and in July 1975 the command signed an agreement with EUD governing MOUSF work.[7] Progressively, as USAREUR removed engineer officers from MOUSF, the division hired civilian engineers to take their places. It was not until January 1976 that General Prentiss deemed that the MOUSF program had recovered the momentum it had lost during the transition.[8]

Whether civilian or military, the MOUSF project officer was the key to effective coordination with the German construction agencies and contractors who, through indirect contracting, renovated the U.S. facilities. The MOUSF agreements provided that the Federal Republic would perform all the program's supervision and administration functions.[9] Project officers served as the link between the construction agencies and the user in the U.S. military community. They worked with the contractors to ensure compliance with the criteria and monitored requests from the users for additional work, verifying whether the work qualified under MOUSF regulations.[10]

Experience in executing the 1971 MOUSF agreement demonstrated that German construction agencies did not always hold contractors to the required contract standards. The agencies sometimes approved major deviations from the plans and specifications as stipulated in the design, accepting what the project officers considered substandard equipment and materials. The American side of the operation was no easier for the MOUSF project officer to handle. Users initiated numerous requests for change, typically four or five small changes per week, and an average of four changes per project, which exceeded the 10 percent limitation on cost overruns. The German agencies frequently accepted user requests for changes uncritically; they had no particular interest in distinguishing between "nice to have" items and permissible inclusions. The MOUSF project officer monitored requests for changes and negotiated reasonable charges. Contractors often levied excessive charges. The German agencies had little incentive to limit overall costs; the contractors had great incentive to raise them, because their profit margins increased along with costs.[11]

The MOUSF project officer influenced the final quality of the work by inspecting the construction as it progressed. On 70 percent of the construction undertaken, German authorities exercised little or no inspection. When they did inspect, officials at times sided with the contractors in disputes over whether the quality of materials or of the construction itself met the required standards.[12] In general, EUD judged the level of technical staffing maintained by the agencies of the Federal Republic inadequate to the task of monitoring MOUSF construction and saw no indication that government inspection services would improve or expand under the second agreement.[13]

Regulations to buy American products complicated the process further. For instance, government-procured mechanical kitchen equipment had to be installed in the renovated dining facilities, but the equipment delivered often did not meet the specifications listed on the orders. EUD might order equipment that burned liquid petroleum but receive equipment engineered for natural gas. Despite specifying the standard for European electrical equipment at 220 volts and 50 cycles, the division often received standard American materials at 110 volts and 60 cycles. In several instances such equipment was shipped with 220V/50 cycle specification plates simply attached in place of the accurate description, a fact discovered "unfortunately only after energizing the equipment."

These problems with the kitchen equipment led to extensive delays for which EUD was blamed, although the division had no control over the mandate to buy American. In frustration, Brig. Gen. Norman G. Delbridge, Jr., commander of the Europe Division, appealed to the commander in chief of USAREUR in 1977 to convene "a meeting of all concerned and responsible personnel to establish a corrective action program that will assure timely delivering of operationally correct MKE [mechanical kitchen equipment]."[14]

Despite all of the administrative reshuffling and the difficulties of supervision, EUD did make progress in renovating and improving the living conditions of U.S. military personnel. During 1975 EUD supervised twenty-two projects completed under the first MOUSF program, bringing the total of completed projects to fifty. Of the Deutschmark (DM) 576.4 million allocated to USAREUR in 1971 (roughly $176.8 million), ENGCOM and EUD obligated 99 percent by the end of 1975; and the value of in-place construction financed by the 1971 agreement amounted to DM 538 million ($165 million). By the end of 1976 the division had essentially finished work under the first MOUSF agreement. Renovation had taken place at 54 casernes, accounting for about 590 barracks buildings and 136 dining facilities serving 55,000 troops.[15] In spite of inadequate management and monitoring, the results were satisfactory. An Office of the Chief of Engineers (OCE) command inspection team that visited EUD in August 1975 singled out the quality of the MOUSF work for special mention.[16]

The second MOUSF agreement of 1974 yielded less spectacular statistics because it involved smaller jobs at more remote facilities. By the end of 1975 German construction agencies had awarded contracts for renovation at only 16 casernes under this agreement; another 3 projects awaited contract and 19 remained in design.[17] By the end of 1976 contractors had completed work on only 12 of the 38 casernes programmed for renovation. The program completed improvements at 12 remote sites during the same year, and the remaining sites included in the plans were under contract. Thirty percent of the 1974 allocation remained to be dispensed. Inflation and exchange rate fluctuations had cut into the buying power of the money allocated. The scope of work had increased at individual sites, particularly for utilities such as electrical and water systems; many of the

MOUSF projects included renovating military housing, such as the enlisted men's barracks in Bremerhaven, Germany.

barracks involved higher outlays than originally programmed.[18] Such factors translated into fewer projects for the money expended.

By the end of 1978 the MOUSF program had nearly run its course. Funds from the Federal Republic had financed the renovation of nearly 800 barracks buildings housing about 90,000 U.S. troops and the reconditioning of about 200 dining facilities. The program had also renovated or enhanced facilities at 35 remote sites in West Germany, ranging from 8-person border posts to company-size air defense sites. By late 1979 only about 5 percent of the original DM 1.1 billion ($482.2 million) allocation for MOUSF remained unspent. Over the next several years that money went into new facilities. By the end of 1984 only about 1 percent of the total funding remained to cover costs associated with projects still under way.[19]

The MOUSF program won consistent praise for its tangible and visible improvements to the facilities for U.S. troops in West Germany. It took several more years before the U.S. government began to fund similar improvements in the living facilities used by the troops on a daily basis.[20]

Air Force Aircraft Shelters

Just before the establishment of the Europe Division, the U.S. Air Forces in Europe engaged the Engineer Command to build atomic-resistant shelters to protect fighter aircraft at three North Atlantic Treaty Organization (NATO) airfields in Germany and at two airfields in the

Netherlands. Like the MOUSF program, the Air Force's program suffered during the transition. The Air Force was impatient to proceed and asked for a special meeting in late June 1974, several days before EUD's official activation, with representatives of EUD and the German construction agencies that would be involved.[21]

To accommodate the Air Force's sense of urgency, Camblor set up a meeting on 21 June. He persuaded representatives from the German Ministry of Defense to meet in Mainz rather than in Bonn, where protocol dictated that such meetings take place. The meeting included representatives from the *Bautechnische Arbeitsgruppe* (Technical Working Group for Construction) and the state financial and construction offices that would be involved in the project from the German side. Two lieutenant colonels represented the Air Force, while Camblor and two staff members represented EUD.[22]

The Air Force spokesman outlined the program for three sites in Germany: Lahr, in Baden-Württemberg, just north of Freiburg; Spangdahlem, near the Luxembourg border in the west; and a third site undetermined at the time of the meeting (eventually Jever in the north between Wilhelmshaven and the Dutch border). The Air Force planned two sites in the Netherlands: Soesterberg and Gilze-Rijen. The facilities at all the sites would be the same: aircraft shelters and the paved aprons surrounding them; storage for conventional ammunition and liquid oxygen; and petroleum, oil, and lubricant (POL) storage facilities. Only the number of shelters or ammunition storage igloos would differ from site to site.

The shelters, third-generation modifications of aircraft shelters already in use, would protect the aircraft in the event of very severe external explosions and allow the pilots to start the engines in the shelter itself to speed takeoff. A design existed for a shelter seventy-one feet wide and forty-eight feet high. Concrete was to be poured to a uniform thickness around double corrugated metal liners. The shelter needed doors that could withstand the kind of attack envisioned and open even if debris were strewn around. The doors had to close quickly in the event of an attack and reopen quickly to allow the plane to taxi out and take off. At the time of the meeting in June 1974, the door-operating mechanisms and the doors themselves had not been designed. The Air Force anticipated that design drawings scheduled for delivery by 1 October would bring the project to 80 percent design completion; the final 20 percent of the design work would be left to the contractor to complete with his site adaptation. The Air Force planned to use an existing design for the ammunition storage structures.[23]

At the meeting in Mainz, Camblor negotiated a streamlined procedure with the German construction agencies and the West German Ministry of Defense to expedite handling of the initial bid solicitations. He also pointed out that although this was a NATO project, the United States was prefinancing the design. In general, the Germans responded well to the appeal for urgent treatment of the project; but they were concerned about coordi-

nation with the German military, with local German construction agencies, with the Canadians who also used Lahr Air Base, and with NATO.[24]

When General Prentiss took command of EUD three months after the June meeting in Mainz, he identified the aircraft shelter project as "our most pressing mission."[25] Because Ralph Wheeler had arrived in Frankfurt before EUD's incumbent chief of engineering, John Tambornino, retired, Prentiss assigned Wheeler to spearhead the project from October 1974 until he took over as chief of engineering on 1 December. Wheeler recognized that one overwhelmed project manager could not monitor the program. He chose to form a team of three men—Gary Sturman, John Tsingos, and Tom Nissen—to work under his direct supervision, saying, "You have nothing else to do except execute this program, and you have six months to do it!"[26] Camblor continued to be involved in all negotiations with the German and Dutch officials.[27]

Wheeler and his team arranged weekly meetings with the Air Force's point man for the project, the base civil engineer at Ramstein Air Base, Col. (later Maj. Gen.) Clifton D. "Duke" Wright. In late December 1974 EUD issued a notice to proceed on a contract that called for design of the standard aircraft shelter with closure. The contract also included the fabrication and erection in Ramstein of a prototype to test the closure. As finally constructed, two doors, each weighing about eighty tons, were installed at each shelter. About the same time the Dutch authorities, under contract with EUD, began design on the two projects for Gilze-Rijen and Soesterberg. The Dutch proved very cooperative and allowed the work on design to begin even though they did not yet have a signed agreement to station both U.S. and Dutch forces on the air bases in question. By March 1975 EUD received for review the final design for the facilities in Spangdahlem in West Germany.[28]

Pesky little problems kept cropping up for the aircraft shelter program. Much of the work on the shelters would take place in northern Germany, Belgium, and Holland, so Prentiss wanted to establish a Northern Area Office to monitor activities in the region; OCE had no extra personnel it could assign him. The program started so quickly and with such indefinite criteria that as late as September 1975 EUD had no current working estimates for individual projects. Comptroller Randolph S. Washington reported to Prentiss that he could not release funds for the work under these conditions without violating funding guidelines.[29]

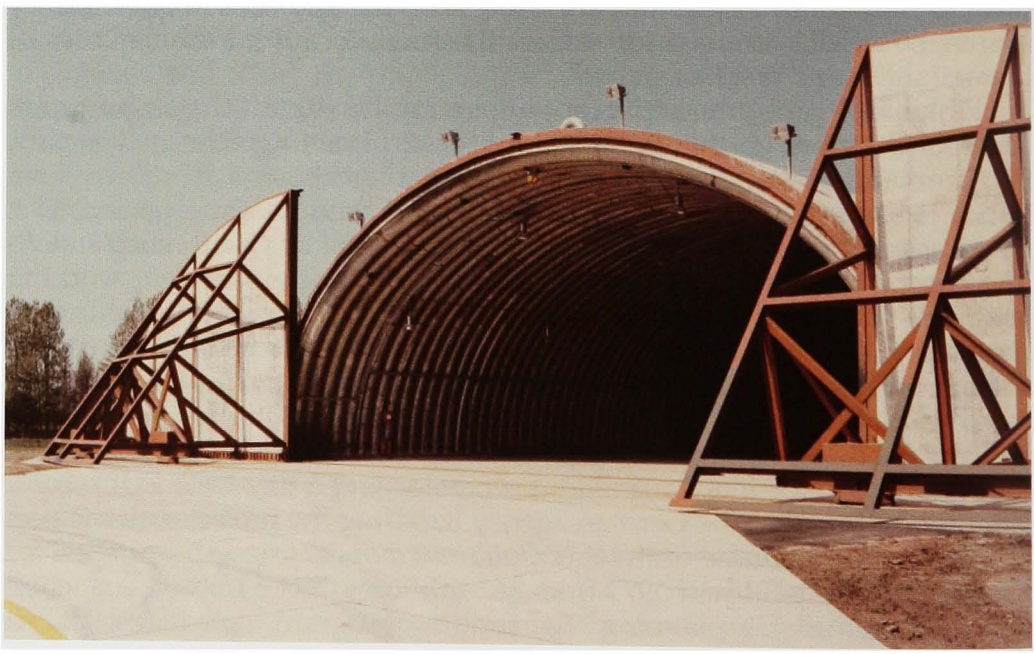
To complicate matters, NATO refused to fund the storm-drainage system designed for the aircraft shelters. When NATO officials indicated that they would support only a small oil separator and a dry well, EUD sent a letter requesting that the German agency handling the project seek the necessary changes from the contractor. Congress reduced the appropriation for the program in fiscal year 1975 from $62 million to $54.5 million, an action that disrupted EUD's planning. The funding program included no provisions for increases in wages, although the Dutch contracts explicitly included as a standard feature an escalation clause for wages. Because wages represented a third of the costs in those contracts, this was a serious omis-

sion. Furthermore, the Air Force did not always respect Army Engineer procedures. Through a German project manager on one project, Air Force personnel directed a contractor to begin a project, over the EUD resident engineer's protests, for which a contract had not yet been awarded.[30]

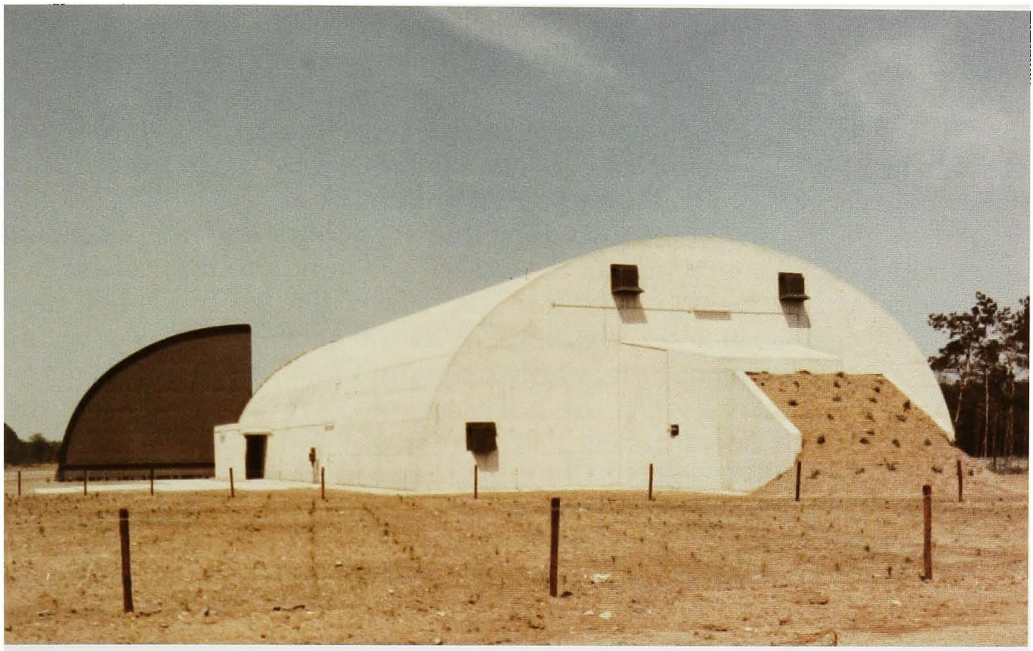
Despite the snags, the aircraft shelter program progressed. EUD approved advertising construction contracts for Lahr and Spangdahlem in April 1975 and advertised contracts for Jever, Soesterberg, and Gilze-Rijen in May. Because bidding was lower than expected, EUD programmed five additional shelters in both Soesterberg and Spangdahlem. Prentiss committed the Engineering Division to work on project management for the additional aircraft shelters, although he recognized that Congress might cancel the program or reduce its scope.[31]

During construction, problems arose regarding the liners used in all of the initial aircraft shelters. The liners came as U.S.-government-furnished property from stocks left over from Vietnam. EUD took special steps to inform the German government that government-furnished materials were being used. EUD kept unusually strict inventory on the equipment and all its parts, and both the Engineering and Construction Divisions maintained careful records and segregate expenditures on these items.[32]

When the materials arrived in Bremerhaven, the major issue became how to get the liners to the five sites. Rail lines ran directly to Lahr and Spangdahlem in southwestern Germany and to the two Dutch sites in Gilze-Rijen and Soesterberg, but no rail line ran to the Jever base in north-



A helicopter squadron transported metal liners needed in remote Jever, Germany, to construct atomic-resistant aircraft shelters equipped with doors weighing eighty tons.



Aircraft shelters resistant to atomic attacks were constructed in 1976 and 1977 in Gilze-Rijen in the Netherlands.

ern Germany. The area engineer for the Northern Area Office, Lt. Col. Roy A. Brown, heard that a Chinook helicopter squadron was looking for flying time. He contacted the squadron, and the commander agreed to ferry his liners from Bremerhaven to Jever in slings under the Chinooks. The operation was a success: The helicopter crews got their training and Brown got the liners delivered to the site.

Brown might have been happier had the Chinooks actually lost the liners in transit, because they proved a headache to install. Each liner had to be reshaped to fit the design of the new shelters. Because reshaping left all the existing bolt holes misaligned, new holes had to be bored to bolt sections of the liner together. Years later Hasso Damm, who had long service with EUD as a cost estimator, observed that the division had "paid more for reboring the holes than the whole sheet metal would have cost new!"[33]

Eight months after the construction contract was awarded, Colonel Brown's team in the Northern Area Office took the final steps to complete the first shelters. On 14 January 1976, working from 5:00 A.M. to 12:00 P.M. in 45-degree weather with occasional showers, crews poured concrete around the liners in Gilze-Rijen. About a week later they placed concrete in Jever.[34] The first placement went in Spangdahlem on 21 April, and from that point completions proceeded rapidly. Contractors transferred completed facilities—the shelters, taxiways and aprons, ammunition storage igloos, and the POL storage and pumping facilities—to the Air

Force in Gilze-Rijen and Jever in January and February 1977, respectively. Construction in Soesterberg continued throughout 1977, although the Air Force used the base while construction progressed. By the end of the year the Northern Area Office had supervised construction of fifty-one aircraft shelters. In aggregate, the construction placed by the Northern Area Office between 1975 and 1977 totaled $40 million.[35]

All in all, the program to build aircraft shelters and the attendant ammunition storage facilities succeeded. Wheeler and Prentiss established good working relations with the Air Force. Even though funds had been erratic and personnel short, they delivered the shelters and supporting facilities in a reasonable time. Camblor maintained effective communication and cooperation with the governments involved. Planning and design for the Air Force project had started in 1974, in the midst of the changeover from the Engineer Command to the Europe Division, and all five air bases had the new facilities in place by 1977. Those who worked on the projects felt their share of frustration but also felt satisfaction because they had delivered on a short fuse, high-profile project.[36]

Naval Facilities in Sigonella, Sicily

Construction at the Naval Air Facility in Sigonella, Sicily, became one of EUD's most sensitive projects in the early months of the division's existence. In April 1971, three years before EUD's activation, the Mediterranean Division had begun work in Sigonella on a multimillion-dollar project. Construction encompassed a naval airfield, runway lighting, POL storage facilities, dormitories, warehouses, terminals, photographic-processing laboratories, a gymnasium, and roads.[37] The work did not progress satisfactorily. Two contractors failed to perform adequately, and their contracts were terminated. For fiscal year 1975 Congress authorized an increase in funds to complete the construction. In June 1975 the Mediterranean Division readvertised the work and awarded new contracts amounting to $1.1 million.[38] Less than a year later the Europe Division inherited the seven contracts for Sigonella, worth about $4.624 million in construction placement.[39]

In May 1976 the commander at the Sigonella Naval Base prepared a forty-page report detailing the deficiencies of construction at the facility and had it hand-delivered to the Naval Command in Norfolk to protest what he considered inferior and unsatisfactory work. EUD dispatched the deputy chief of construction, Jacques Bouchereau, to Sigonella to examine the work on site and to cooperate with the Navy's engineers. Fortunately, the naval officer in charge of construction in Spain, whose area of responsibility included the work in Sigonella, was more interested in resolving the problems and securing adequate construction than in an interservice fight.[40]

In early June the Engineering Division at EUD examined the foundations of fuel tanks and the photographic laboratory in Sigonella. The EUD commander, General Delbridge, requested a complete analysis of problems related to the lighting system for the taxiways at the Sigonella

airfield. He also scheduled a trip to Sicily in July with OCE's chief of military construction, Maj. Gen. Bates C. Burnell, "to demonstrate to the Navy that we want this problem resolved."[41] Delbridge was prepared to replace the entire lighting system if that was what it would take to satisfy the Navy. As a further sign of his resolve to "get it right," he called on OCE in Washington for help. OCE dispatched engineers from the Waterways Experiment Station in Vicksburg, Mississippi, who specialized in soil analysis and other matters under investigation in Sigonella.[42]

Delbridge's attention to the Navy's needs in Sigonella paid off, and the Navy awarded EUD a contract to correct deficiencies. EUD also won a contract to manage construction for the Navy of a satellite communications terminal in Naples. Between 1976 and 1978 EUD placed over $7 million in construction in Sigonella. In that time the division completed an air passenger terminal, taxiways, POL storage and fueling facilities, maintenance hangars, storage buildings, a base exchange, barracks, gymnasiums, officers' clubs, and several water treatment plants.[43]

Construction in Sigonella continued into the 1980s on new bachelor officers' quarters, a mess hall, and modernization of the bachelors' enlisted quarters. The fuel tanks that had been programmed in 1971 and had run into foundation problems were completed and put into operation on 24 May 1979. This was the last of the projects from the ill-fated construction contracts of fiscal years 1971–1974.[44] By correcting inferior work, EUD redeemed the Corps' reputation with the Navy.

New Programs

MOUSE, the aircraft shelter program, and the facilities in Sigonella dominated EUD's workload in design and construction during 1974–1977. In 1977 the division's focus began to change as prospects improved for increases in appropriated funding for military construction in Europe.

ENGCOM's annual placement rate for design had been about $100 to $150 million a year. By comparison, EUD's design placement went from $430 million in July 1975 to $1.3 billion by late 1977, a 300 percent increase in a little over two years and roughly a tenfold increase over the ENGCOM annual average. During fiscal years 1977–1978, the amount of MCA money coming to USAREUR more than tripled, from just under $60 million to over $185.6 million. In 1979, 1980, and 1981, MCA funds alone averaged more than $170 million each year. In 1982 MCA funding reached $294 million and continued at that level through fiscal year 1986.[45] This dramatic increase in funds available for military construction in Europe began in the latter half of the administration of President Jimmy Carter and continued under President Ronald Reagan. The new funds made possible two complementary developments in military construction in Europe: the intensification of work on projects already under way and the introduction of several new weapons systems.

The tempo of work at EUD picked up as more money became available. Projects related to the military infrastructure of the U.S. and NATO

forces in Europe (for example, ammunition storage and the improvement of warehousing facilities for pre-positioned equipment) received $160 million between 1976 and 1980. This translated into a dramatic increase in construction.[46]

Ammunition Storage Facilities

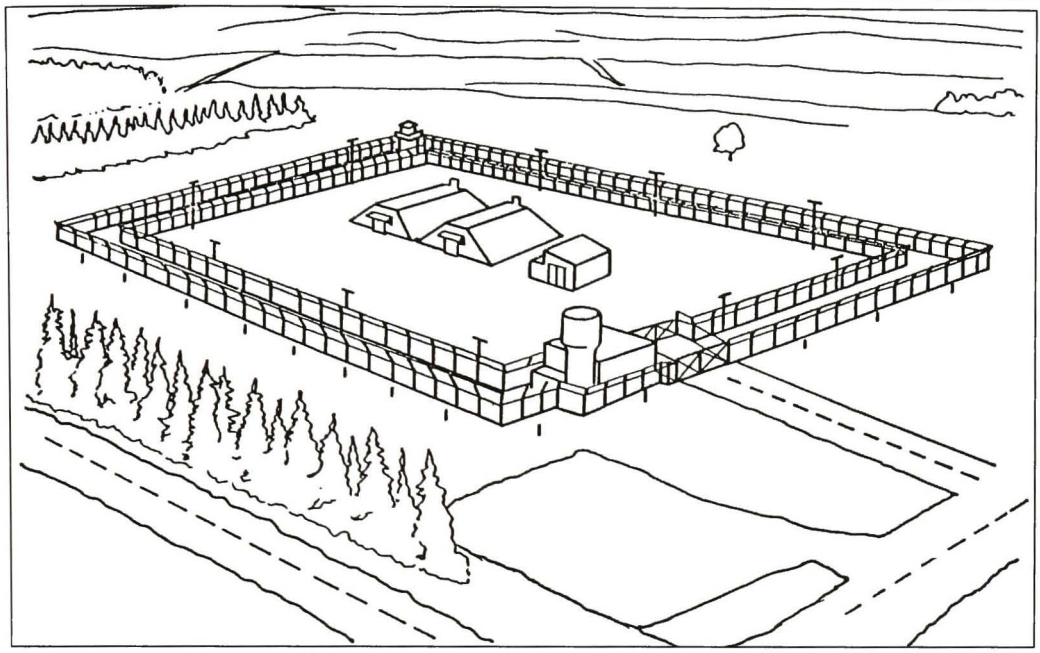
In the late 1970s EUD initiated new projects directly related to the infrastructure that supported the combat mission of U.S. troops—ammunition storage and the Long Range Security Program. Work on ammunition storage was hardly new. During the 1950s in France and the 1960s in Germany, Army engineers had managed construction programs to improve storage facilities for ammunition.[47] In the 1970s, however, terrorist organizations, such as the Baader-Meinhof Gang, began to direct hostility in particular against the United States and its military presence in Europe. The imperative to increase security for U.S. nuclear weapons and missiles intensified with this growth of terrorism in Germany and in Europe.[48]

At the beginning of the decade, the 59th Ordnance Brigade, commanded by Maj. Daniel Waldo, Jr. (later a deputy commander and then commander of EUD), conducted a survey of ammunition storage sites that the Engineer Command used to formulate plans for improving facilities. ENGCOM's planning and design, designated as the Special Ammunition Storage (SAS) program, initially dealt with fifty-one sites and projected a number of measures to delay terrorists long enough to permit additional security forces to respond. The construction program, scheduled to begin in 1974, called for special fencing, a clear zone both beyond and inside the security fence, guard towers, special lighting, and an intrusion-detection alarm that would alert the security force on site to any attempted penetration of the secure area. Within the area, the security measures called for special bunkers or reinforcement of existing bunkers to store the munitions. The basic design for the bunker used the Stradley igloo that had been used in relocating munitions from France in 1966–1967. The bunker was a fully reinforced concrete structure, normally built above ground and covered with two feet of dirt and grass. The earthen cover was designed for camouflage, to limit the damage from any accidental internal explosion, and to lessen the impact of any external explosion.

ENGCOM initiated limited construction early, using OMA funds available in 1973, to correct security deficiencies at existing ammunition storage sites. Work on design for the larger part of the program funded by the MCA budget ran through late 1973 and early 1974, with the award of construction contracts scheduled for May 1974. Attention to the program intensified when, during 1973, the Department of Defense's Explosives Safety Board called upon the Corps of Engineers to furnish drawings and specifications to improve magazines for the storage of explosives.[49] (*Figure 4*)

The schedule that ENGCOM had projected in 1973 could not be maintained through the early months of the transition to the Europe Division. Only in October 1974 did EUD receive the directive from OCE

Figure 4: Drawing of a Proposed Ammunition Storage Site, 1981



in Washington authorizing final design for special ammunition storage. The authorization expanded the list by about a dozen from the earlier total of sites included in the ENGCOM special program. OCE designers also added a new building to the project that incorporated entry-control facilities, a site security control and alarm center, and quarters for a combined response force of thirty-five soldiers. EUD adjusted its design and site adaptations for the new building. Design specifications also mandated a new intrusion-detection alarm system for the storage igloos and the perimeter fencing, improvements in perimeter lighting and fencing, standby power and communications systems, and improvements in utilities.[50] Some rudimentary construction began in late 1974 when the 24th Engineer Group (later the 18th Engineer Brigade) received an assignment to improve the security of an ammunition dump near Kaiserslautern. The group repaired fences and secured bunkers, but without the benefit of newly designed systems.[51]

EUD's revised schedule for the new ammunition-storage program targeted spring 1975 for the award of initial design contracts, with construction anticipated in fiscal year 1976. In a public debate in the spring of 1975, Senator John Pastore raised the need for enhanced security for U.S. weapons. He revealed a hitherto secret two-year-old report that detailed deficiencies in the system to secure atomic weapons in Europe. The report indicated that during 1972 more than 200 security-force soldiers had been relieved of duty for a variety of infractions, eighty-three of them for drug abuse. Discussions of the report in the press evoked general concern about

the security of U.S. weapons and ammunition, as well as about the combat readiness of equipment stored in depots throughout Europe. The U.S. Army faced further embarrassment when in June 1976 a weapons depot in Wildflecken was robbed of fifteen light antitank weapons that had a range of over 300 yards. The thieves got in and out without a trace, and experts concluded that they had detailed knowledge of both the location and the security procedures of the storage site.[52]

Even before Pastore's revelations, USAREUR had urged that the United States promote secure storage by prefinancing increased security measures for NATO ammunition-storage sites where the United States was the sole user. The increasing public scrutiny turned the work at ammunition-storage sites into high-priority projects.[53]

During 1976 OCE contributed the support of its engineering staff to EUD's work. The OCE engineers prepared plans and specifications to upgrade ammunition-storage facilities and evaluated proposals for procuring and installing intrusion-detection alarm systems at forty-six storage sites in West Germany. The United States had about 7,000 nuclear weapons in West Germany distributed among 100 sites.[54]

As often occurred with high-pressure projects, the program to enhance secure storage of ammunition began with no more than draft criteria. As criteria evolved, they were not always consistent, and correcting the inconsistencies caused delays. As previously noted, OCE's concept design had introduced a new building at each site to house the entry control facilities and to provide living space for the alert force. This clashed with the Secretary of Defense's directive that EUD use to the extent possible existing structures at or adjacent to the sites. Another problem arose because the design specified a minimum of thirty feet of separation between the perimeter fence and any interior structure to accommodate a specific intrusion-detection alarm system. Because the fences at all the existing sites had only about twenty feet of clearance, the requirement would have forced construction crews to move every fence.[55]

Changing criteria also disrupted design work at OCE. When General Prentiss asked the chief of engineers, General Gribble, about the definitive designs for ammunition storage facilities in early 1975, Gribble replied that the designs were being held up because OCE had "not yet been provided with an anticipated change to the criteria manual."[56] All this translated into repeated deferral of the deadline for awarding contracts. Nonetheless, by late May 1975 EUD had awarded design contracts for all sixty-four sites. With the money available, Prentiss estimated that EUD could count on construction at twenty-eight sites during fiscal year 1976.[57]

In July 1975 Prentiss asked his staff to differentiate between security programs for storing conventional and nuclear ammunition. By the autumn of 1975 the Engineering Division began to use the designation Long Range Security Program in place of the earlier project title, Special Ammunition Storage. The records do not make clear whether this new label applied to enhanced security for conventional or for nuclear weap-

ons in storage, the ammunition storage shelters (igloos) or the security devices surrounding them, or any or all of the above.[58]

In fiscal year 1976 EUD's Engineering Division completed its design for projects with a construction value of $34 million on seventeen sites labeled LRSP. In the following fiscal year the division completed design for another twenty-six sites at an estimated construction value of $38.6 million and awarded construction contracts on eleven of these. In fiscal year 1978 EUD finished design on six more sites, but only one went to construction contract. Adding to this work, EUD awarded a contract late in the year worth $13.9 million for intrusion-detection alarms.

The vocabulary used at EUD in describing the projects remained internally inconsistent, with the Construction Division and the Engineering Division using different terms. The Construction Division described three different activities. First, storage facilities worth $34 million were completed under the "ammunition program" (in Italy at Camp Darby and in West Germany in Bernbach, Bad Hersfeld, Fulda, Hohenfels, Bindlach, Schwabach, Schweinfurt, Wildflecken, Bad Kissingen, Miesau, and Weilerbach). Second, construction was under way for what the Construction Division labeled the Long Range Security Project at twenty-eight sites. Third, the project for conventional "Ammunition Storage Facilities" in Koeppern had a listing separate from that for the work on LRSP.[59] The labels make it difficult to assess which construction activities belonged to which programs.

It is nonetheless clear that by late 1978 construction had begun under EUD supervision on new ammunition storage igloos and on improvements in security for ammunition storage facilities in five different European countries, with work concentrated in the Federal Republic of Germany. During that year EUD reached the final stages of design for seventy other NATO sites, so that it had work continuing on more than 100 ammunition storage projects.[60] The LRSP, prefinanced with MCA funds, was supplemented beginning in 1979 by NATO funding, as shown in *Table 11*. The original program for 132 sites had been consolidated to 103 sites, of which one was not eligible for NATO financing.[61]

Managing the construction for ammunition storage projects involved unusual annoyances. Security at the sites was tight, and everyone had to have an armed escort inside the secure area, including all personnel employed by the contractor and even EUD representatives from the area or resident offices. Concerns for security imposed limits on how many people could be admitted to the area at a time, thus affecting the size of work crews. Security also dictated that pertinent information, such as the location of the utility lines, could not be given to the host-nation contractors directly. This led to delays in construction and occasionally to damage to existing utilities. Projects prefinanced by the United States for NATO had to conform to NATO criteria to be eligible for full recoupment of costs, but many of the change orders issued on these projects either overlooked or ignored NATO criteria. Additional complications arose because no one at EUD

Table 11

Long Range Security Program, 1976–1982

Year	Military Construction, Army ($ thousand)	Other[a] ($ thousand)	NATO ($ thousand)	Total	Number of Sites
Fiscal year 1976	$340	--	--	$340	17
Fiscal year 1977	419	7,500	--	7,919	26
Fiscal year 1978	68	3,200	--	3,268	5
Slice 28[b]	--	--	1,800	1,800	1
Slice 29	--	--	57,400	57,400	27
Slice 30	--	--	5,700	5,700	3
Slice 31	--	--	40,500	40,500	24
TOTAL	$827	$10,700	$105,400	$116,927	103

Source: Briefing Book, Europe Trip, Maj. Gen. Ames S. Albro, Jr.

[a]Congress specified funds to purchase intrusion detection system (IDS) components.

[b]North Atlantic Treaty Organization allocations (Slice 28 and following) overlap with U.S. fiscal years 1977 and following.

had the responsibility to keep the project managers current on NATO requirements. EUD provided no clearinghouse for sharing experiences with change orders or other lessons learned so that any project manager could draw on the information.[62]

Jose Cruz, who had become EUD's chief of construction in late 1977, recalled the difficulties associated with the ill-defined and shifting criteria typical of the LRSP projects. When criteria were issued in 1977, EUD came up with "what we thought were pretty elaborate plans"; but these measures never quite satisfied the Army's planners. "They'd come back and say, 'Well, that's not going to do. This control tower has to have bullet-proof windows,' and then they'd say, 'Well, those are bullet-proof but they scratch—you can't have anything that scratches.' ... They kept changing the criteria."[63]

General Wilson had similar memories of the work on LRSP: "We could never get that right.... There were too many cooks ... [too many] experts from USAREUR" who urged EUD to "upgrade the sensor system, change from the design we'd already approved, and go on to the next generation." Fence sensors were so delicate that the wind could set them off; and despite EUD's rodent fences, small animals occasionally set off the motion

sensors inside the ammunition storage igloos. Wilson termed the program "frustrating"; Cruz called it "a nightmare."[64]

It was frustrating for other personnel associated with the projects, too. The Dutch complained that EUD assigned different project managers to every little project.[65] Within the division the volume of LRSP paperwork and the frequent claim that it was a high-priority endeavor generated a complaint from the Office of Administrative Services. The paperwork for LRSP began to interfere with the timely completion of other work. The director of the office asked that those requesting office support for LRSP use the "urgent" designation with greater discretion.[66]

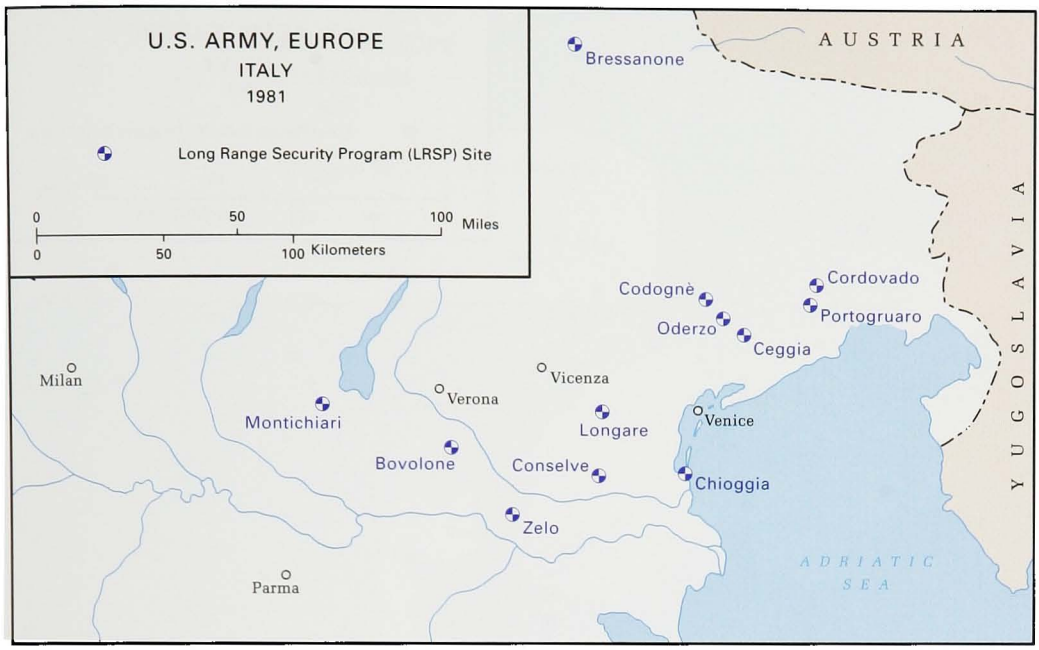
Because of the scope and complexity of the LRSP, USAREUR established a task force in June 1979 to coordinate the program's development and progress. The deputy commander in chief, Lt. Gen. Pat W. Crizer, took charge. Under Crizer's personal supervision, the deputy chief of staff for operations established a "master milestone chart" to track progress on LRSP projects. Also in 1979, NATO finally approved criteria for the program. In September 1980 Brig. Gen. George Kenyon "Ken" Withers, Jr., successor to General Wilson as commander of the Europe Division, recognized that responsibilities were becoming more clearly delegated and that systems existed to correct deficiencies. Withers attributed the improvements in management of the LRSP to "the fact that someone finally took charge of this program."[67]

Storing ammunition involved more than providing sufficient storage space. It also meant putting the ammunition in the right place to support the troops in the initial phase of an all-out attack. In the late 1970s USAREUR began a program called Ammunition Upload to furnish its tanks, armored personnel carriers, and artillery pieces with the initial basic load needed to operate in an emergency. To accomplish this, USAREUR requested construction of additional paved parking areas and storage surfaces and more fencing for forward ammunition storage sites. This added another dimension to EUD's work on ammunition storage and security. The United States financed projects to upgrade storage and to secure parking for the basic load and construction connected with the forward storage of ammunition, whereas NATO financed similar construction for reinforcement forces.[68]

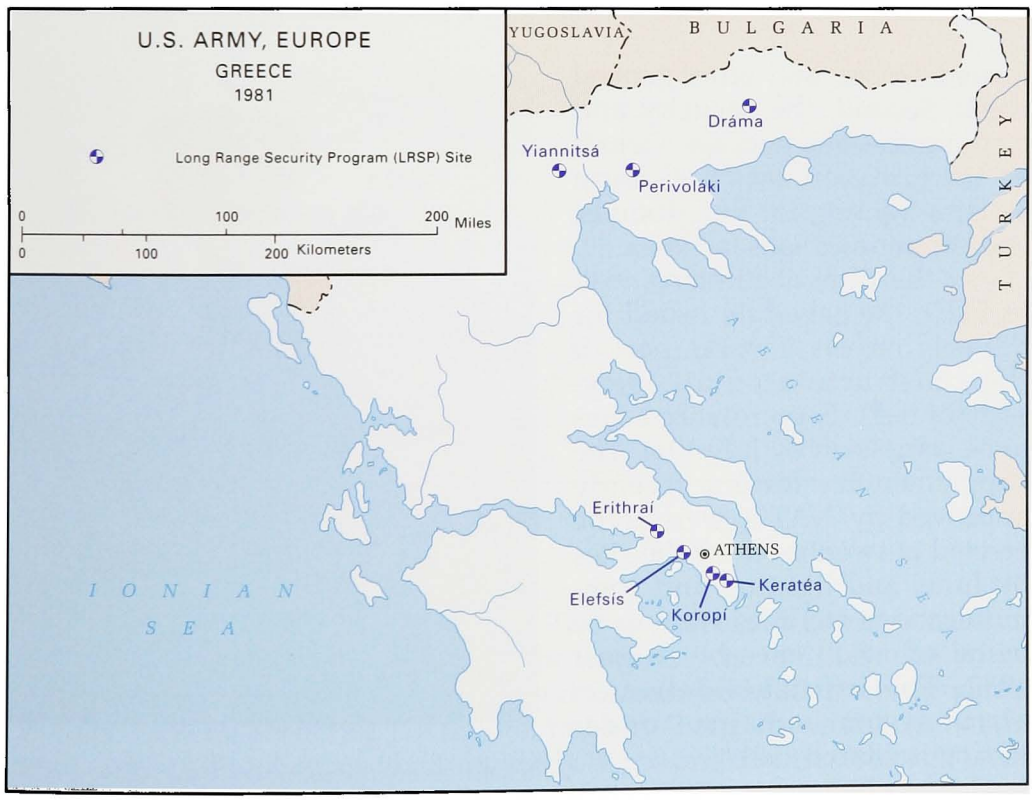
In March 1981 Withers reported on the progress of LRSP to the chief of engineers, Lt. Gen. Joseph K. Bratton, who was visiting EUD. The United States had prefinanced forty-eight LRSP sites and had drawn up designs for thirty-eight others to be funded by NATO. Host nations had designed another twenty-one sites, also for NATO funding. Thus, EUD supervised work in progress at a total of 107 sites ranging across West Germany, Italy, Greece, Turkey, and the Netherlands. (*See Maps 22–26.*) Eight different NATO nations (the Federal Republic of Germany, the United States, Italy, Belgium, Greece, Turkey, the Netherlands, and Britain) operated these 107 sites as user nations. Construction had progressed in two phases. First, the civil works package consisted of the site security control center or the entry-control building with living quarters, one or more guard and observation

U.S. ARMY, EUROPE
WEST GERMANY
1981
Long Range Security Program (LRSP) Site
0 50 100 150 Miles
0 50 100 150 Kilometers
DENMARK
NORTH SEA
Meyn
Kellinghusen
Höhenkirchen
Dornum
Wiesmoor
Rodenkirchen
Schönemoor
Westerscheps
Varrelbusch
Syke
Lahn
Duesen
Barme
Barnstorf
Vechta
Liebenau
Vörden
Wagenfeld-Hasslingen
NETHERLANDS
Schöppingen
Borgholzhausen
Hamminkeln
Dülmen
Münster-Nord
Westkirchen
Buchhagen
Datteln
Werl
Sennelager
Sonsbeck
Unna
Büren
Soest
Kapellen
Hemer
Hinsbeck
Arsbeck
Marienheide
Pütz
Geilenkirchen
Wahnerheide
Nutscheid
Treysa
Herborn
Giessen
Düren
Lipper Höhe
Billiger Wald
Alten Buseck
Obersayn
Steinbach
Montabaur
Dichtelbach
Kemel
Finthen
Hanau am Main
Hontheim
Wuschheim
Aschaffenburg
LUXEMBOURG
Wackernheim
Münster-Dieburg
Lehmgrube
Dexheim
Kriegsfeld
Kitzingen
Baumholder
Miesau
Quirnheim
Hardheim
Philippsburg
Dallau
Feucht
Clausen
Oberauerbach
Siegelsbach
Landau
Heilbronn
Hemau
Salzwoog
Fischbach
Gross-Sachsenheim
Wurmberg
Danube R.
Gross-Engstingen
Günzburg
FRANCE
Rhine R.
Inneringen
Lechfeld
Landsberg
Pfullendorf
Leeder
SWITZERLAND
LIECHTENSTEIN
AUSTRIA
BELGIUM
BERLIN
POLAND
Elbe R.
EAST GERMANY
CZECHOSLOVAKIA

Map 22


U.S. ARMY, EUROPE
ITALY
1981
Long Range Security Program (LRSP) Site
0 50 100 Miles
0 50 100 Kilometers
AUSTRIA
Bressanone
YUGOSLAVIA
Codognè
Cordovado
Portogruaro
Oderzo
Ceggia
Milan
Vicenza
Verona
Montichiari
Longare
Venice
Bovolone
Conselve
Chioggia
Zelo
Parma
ADRIATIC SEA

Map 23


U.S. ARMY, EUROPE
GREECE
1981
Long Range Security Program (LRSP) Site
0 100 200 Miles
0 100 200 Kilometers
YUGOSLAVIA
BULGARIA
Dráma
Yiannitsá
Perivoláki
TURKEY
Erithrai
ATHENS
Keratéa
Elefsís
Koropí
IONIAN SEA
AEGEAN SEA

Map 24

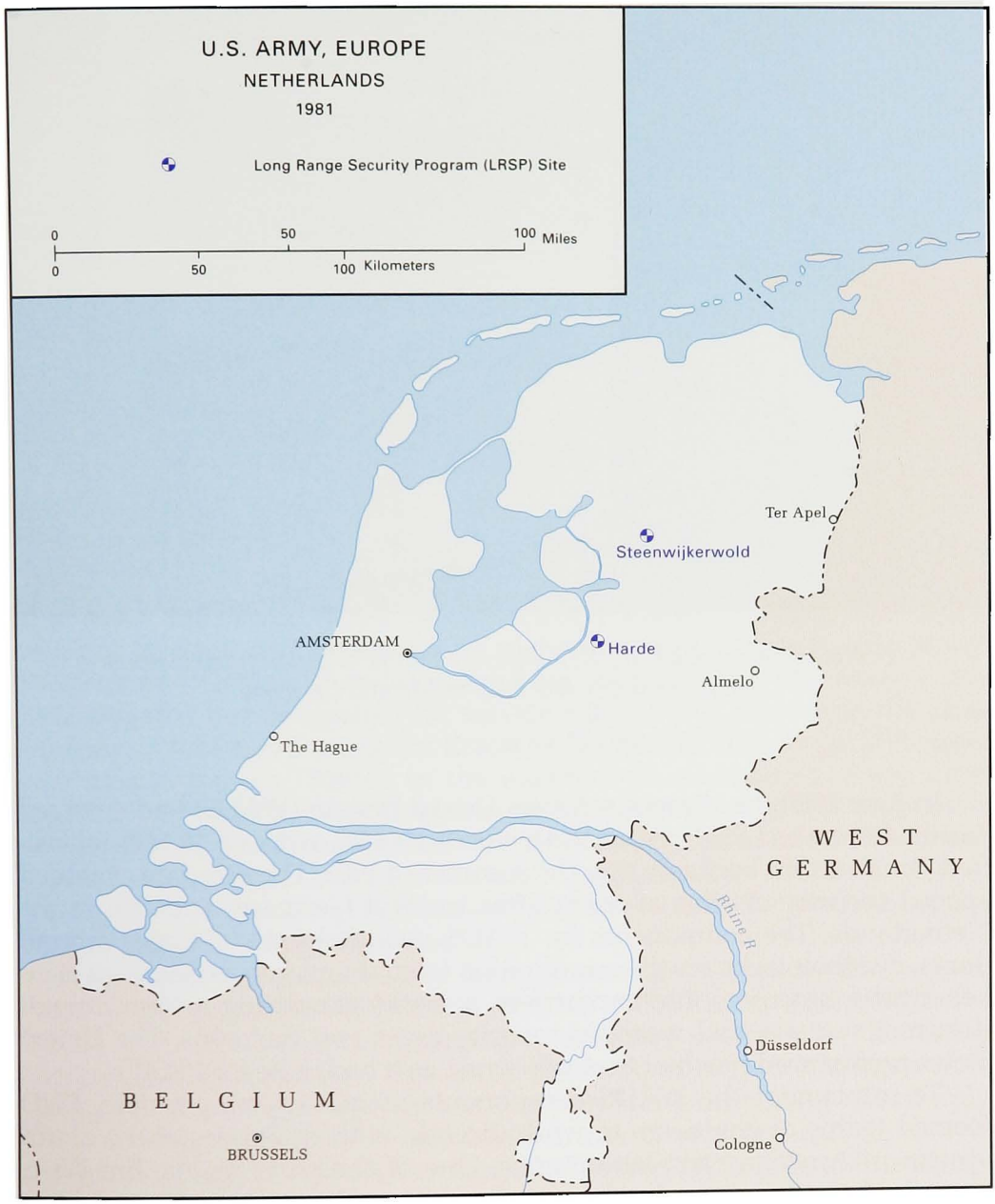
Map 25

towers, fences, and other general work. Second, the security and communications package included the intrusion-detection alarm system, lighting for the grounds, and communications facilities.

At the time of Bratton's visit to EUD, the schedule called for the original civil works part of the construction on all forty-eight of the U.S. prefinanced sites to be completed by July 1981. The supplementary towers, recently approved by NATO, were to be erected at twenty-one of the sites by June, and lighting and communications facilities were to be installed at all sites by August 1982. The intrusion-detection alarm system remained under testing in March 1981.[69]

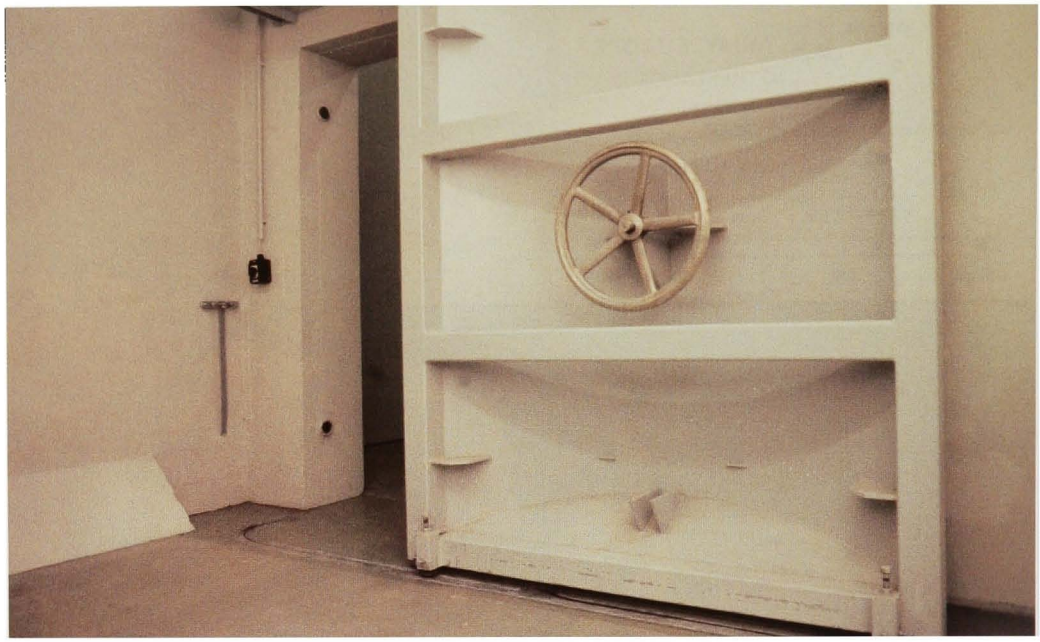
Late in 1981 ammunition storage and weapons security again

Facilities at ammunition storage sites included guard and observation towers, such as the tower in Heilbronn, Germany.



Map 26

became the focus of intense attention. Two spectacular terrorist attacks on U.S. military personnel occurred in the autumn: one in Ramstein, which resulted in several deaths, and a second against USAREUR's commander in chief, General Frederick J. Kroesen, in Heidelberg. These attacks heightened concern about security, particularly at the ammunition-storage facilities. The incidents put increased pressure on EUD to install the intrusion-detection alarm systems at weapons storage sites.



To protect ammunition at LRSP sites, the Europe Division fitted bunkers with heavy doors, like these in Miesau, Germany.

In June 1980 the Weapons Access Denial System (WADS) had emerged as an addition to LRSP.[70] After the terrorist attacks, work on WADS intensified; construction began during the summer of 1982. The program provided special security devices at thirty sites in West Germany and one in the Netherlands. The components for WADS included exterior cages around doors, deadbolt locks for the ammunition igloo doors, concertina wire blankets over weapons as interior barriers, a smoke-generating system, sound-deterrent systems, and weapons security cages and tiedowns. The United States prefinanced much of the early work, as it had done for LRSP.[71]

To implement the WADS components as quickly as possible, EUD formed teams of engineers to work directly with designers of the alarm system in American test laboratories. One of the participants, Jim Wise, described the teams as having a range of expertise that allowed EUD to "pull [an idea] off the drawing board and come to Europe and build it," making design changes as construction progressed. Project managers from the Engineering Division and construction managers from the Construction Division worked together on a particular project as a whole—design and construction working in tandem rather than sequentially.[72] Reflecting on the urgency of the program, the EUD chief of construction, John Blake, noted that "construction agents are not supposed to do research and development, [but] it was unavoidable with LRSP."[73]

The ammunition-storage program remained a nettlesome management problem well into the 1980s. When Brig. Gen. (later Maj. Gen.) James

W. van Loben Sels commanded EUD in 1984–1985, he also wrestled with LRSP:

> Either [designs] were done very poorly or we kept changing our mind. I think both. You know, towers with blind spots. Lighting with dark spots and areas not covered.... And just about the time you got it done, then they'd have another vulnerability analysis and decide that they would get another set of barriers.... It seemed like a never-ending program.[74]

Blake called LRSP "maybe the most troublesome [program] that I ever dealt with in my whole career."[75] The LRSP went on despite the headaches that it caused. In June 1990 EUD finally completed a construction package in Kaiserslautern that it had begun in November 1986.[76]

Pre-positioned Materiel

Caring for ammunition was but one of the storage problems that the U.S. forces in Europe faced. Since the early 1960s American and NATO military strategy had depended on materiel stored in warehouses across Western and Central Europe. American military units stationed in the United States, but designated for service with NATO, trained on the same equipment at home. During the REFORGER (REturn of FORces to GERmany) exercises begun in 1969 or in the event of an emergency, these units would be airlifted to West Germany and locate the necessary equipment pre-positioned for them. The official label for the stored equipment was Pre-positioned Organizational Materiel Configured to Unit Sets. One of the major construction programs of the 1970s involved the improvement of the POMCUS storage facilities.

Pre-positioned materiel had been drawn down sharply during and immediately after the Arab-Israeli War of 1973. During that conflict the Office of the Secretary of Defense, overruling protests by the Army, ordered the most modern and battle-ready equipment withdrawn from warehouses in Europe and sent to resupply the Israeli Army. To comply, the U.S. Army shipped 400 tanks, 900 armored vehicles, and 100 howitzers to Israel from stocks in Germany. By the mid-1970s little of this equipment had been replaced.[77]

In May 1975 a General Accounting Office (GAO) report sharply criticized the condition of equipment maintained and stored in Europe. Eight arsenals in West Germany contained materiel that according to regulations was to be ready for use in six hours. The GAO concluded that the six-hour deadline was a fantasy under existing conditions. The report also acknowledged the enormity of the problem that the Army faced in caring for vast quantities of materiel. While recognizing the difficulties involved, the GAO judged that the situation had reached crisis proportions. Indicative of the problem, GAO reported that over 36 percent of the vehicles and trailers examined had missing, faulty, or improperly installed parts.[78]

The Army knew that its storage facilities needed attention, but it had no money even to pay for removal of the World War II ammunition and equipment that still clogged its warehouses. In 1976 Congress funded the POMCUS program, permitting the removal of the obsolete materials. The program also made $200 million available to expand USAREUR's controlled-humidity storage space for pre-positioned equipment. The appropriation covered improvement of existing warehouses and construction of new ones with as much as 40,000 square feet of storage space each. Humidity control, achieved by lining Quonset-type buildings with a vinyl skin, reduced rusting significantly and slowed other deterioration, such as the cracking of rubber seals, that could reduce the readiness of equipment.[79]

Congress approved an additional $33.5 million in fiscal year 1978 MCA money for eight POMCUS projects in West Germany. At the same time, the source of support for POMCUS began to shift, with less money coming from MCA and more from the NATO Common Infrastructure Program. In subsequent years the United States convinced its NATO partners that new funding categories for NATO infrastructure projects, including strategic stockpiling of equipment and ammunition, were necessary to increase the early readiness of the forces in Central Europe. By the late 1970s USAREUR obtained "significantly more construction funding from NATO than from Congress."[80] In May 1979 the NATO ministers approved funding for POMCUS; in the following year's budget POMCUS received the equivalent of $108.6 million, and more than double that figure was programmed for 1982.[81] By 1981 the Europe Division completed storage for sets of equipment for three divisions and had warehouses nearing completion for a set of equipment for a fourth division. Design had begun for a fifth set in Belgium, and plans called for a sixth set in the Netherlands.[82]

Stored equipment must be cleaned and maintained, and the program to enhance storage facilities included improvements in maintenance areas and storage space. Program managers found it necessary to upgrade utilities to take into account the new equipment and new conservation and environmental concerns. Connections with existing water-distribution and sewer-collection facilities were therefore incorporated into the new facilities for washing vehicles. Heating plants and distribution lines were augmented. Fueling stations were installed.[83]

Because vehicles and field equipment had to be thoroughly washed after use, the new construction provided facilities such as tank washracks, paved areas (hardstands) for parking vehicles out of the mud, and appropriate maintenance buildings for draining equipment of gasoline and oil.[84] In the new tank and vehicle washing facilities, nozzles sprayed water under pressure onto tanks and other vehicles to blast the mud off of the tracks, wheels, and undercarriages. Water from retaining basins could be drained off and used again, and the mud could be scooped out and trucked away. Oil separators recovered petroleum waste for proper disposal. In the late 1980s EUD began to "sandblast" using pulverized

Vehicle shelters, like this one in Mönchengladbach, Germany, were an integral part of the POMCUS and POMSS construction programs.

walnut shells as the abrasive element. The shells degraded biologically, eliminating cleanup and disposal.[85]

New maintenance equipment and facilities included battery storage shops, sandblasting rooms, spray-paint apparatuses, and work areas designed to accommodate other equipment such as radio sets, hand weapons, and helmets.[86] With the introduction of these sophisticated facilities beginning in the late 1970s, effective maintenance and proper storage of equipment became possible. Batteries could be removed from vehicles for separate storage, checked, and charged in special shops adjacent to the controlled-humidity warehouses in which the vehicles remained stored. Equipment that needed repair after a REFORGER exercise could be removed, fixed, painted, and stored. As the maintenance facilities expanded, it became possible to handle in phases the vast array of items in use during an exercise. Items went first to outdoor storage, where maintenance crews inspected each piece, taking those that needed attention through the shops and then placing them in controlled-humidity storage until the next exercise. The sites also included lubricating stations and fuel-storage areas, utilities, and roads.[87]

By the early 1980s NATO was the predominant source of funding for construction of storage facilities, and the program came to be referred to by a new name, Pre-positioned Organizational Materiel Storage Sites (POMSS). Although many of the early sites had been built in the area around Heidelberg, much of the construction during the 1980s took place in northern Germany, Belgium, and the Netherlands.[88] (*See Map 27.*)

Bremen
Ter Apel
Coevorden
AMSTERDAM
Almelo
Hannover
The Hague
NETHERLANDS
WEST GERMANY
Twisteden
Herongen
Grobbendonk
Mönchen-Gladbach
Kassel
Zutendaal
Brunssum
BRUSSELS
Cologne
Meuse R
Liège
Rhine R
BELGIUM
Frankfurt
Main R
Mosel R
LUXEMBOURG
Kaiserslautern
Mannheim
Miesau
Heidelberg
FRANCE
Pirmasens
Germersheim
Heilbronn
Metz
Karlsruhe
Rhine R
Stuttgart
U.S. ARMY ENGINEER DIVISION, EUROPE
POMSS LOCATIONS
1981
Pre-positioned Organizational
Materiel Storage Site (POMSS)
0 50 100 Miles
0 50 100 Kilometers

Map 27

In 1981 Al Opstal of EUD's Northern Area Office became involved with POMSS projects as plans took shape for construction at sites in Belgium and the Netherlands. A naturalized American citizen and Air Force veteran, Opstal had been born in the Netherlands. His fluency in the Dutch language gave him an advantage in the Flemish-speaking areas of Belgium, as well as in working with Dutch construction crews and government officials. Opstal monitored POMSS construction at more than a half-dozen sites, including Brunssum.

The POMSS site in Brunssum in the Netherlands, nicknamed Hendrik Caserne by the 350 American and Dutch personnel who served there, presented a range of problems typical of such projects. The building site was on a heap of coal slag that had to be leveled into a plateau before work could begin, and work had to respect a concrete batch plant that could not be moved. Construction began in April 1982 and was completed in December 1984 at a cost of $18.5 million. The twenty warehouses covered 116 acres and were maintained by a score of Americans and over 300 Dutch. In 1989 NATO anticipated expanding the site in Brunssum by adding five additional storage warehouses.[89]

Opstal also monitored work at other sites in the Netherlands, including Ter Apel, Almelo, and Coevorden, all completed in 1984 and 1985 at a total cost of just over $50 million. Similar POMSS construction took place in Zutendaal and Grobbendonk, Belgium. Several of the sites also incorporated "unit basic load" storage projects. Unit basic load sites consisted of earth-covered bunkers arranged to provide the various types of ammunition to supply a specific unit whose equipment was stored in the controlled-humidity warehouses on the same site.[90]

The POMCUS construction that continued throughout the 1980s improved equipment readiness dramatically. During the GAO survey of equipment in Germany in 1987, only 18 of the 8,654 wheeled and tracked vehicles brought out of the Brunssum storage site in the Netherlands for REFORGER 87—about 0.2 percent of the total—were inoperable.[91]

Throughout the 1970s EUD had steadily pursued its mission to build for the U.S. soldier. The MOUSF program addressed the living conditions for the troops in the barracks, but MOUSF funds were largely spent by 1980. In Sigonella, Sicily, work for the Navy and the Air Force under the aircraft shelter program declined. Only LRSP and POMCUS projects carried into the new decade. As the 1970s ended, the focus of EUD's work began to shift to projects involving new weapons and the facilities to support them, projects intended to enhance the U.S. military's ability to meet the combat mission of the 1980s.

11

SUPPORTING THE COMBAT FORCES

During the 1970s the Federal Republic of Germany made increasingly significant military contributions to the North Atlantic Treaty Organization (NATO). This allowed U.S. military planners to reassess the strategic positioning of U.S. troops in West Germany and to conclude that they could redeploy combat elements to improve the Western alliance's defenses. As the plans for redeployment developed, new weapons systems came into production, making sophisticated technologies available. Both of these trends created new work for the Army engineers. Redeployment led to construction of a new garrison in northern Germany, and new weapons systems stimulated construction of new support facilities. These developments significantly increased the workload of the Europe Division in the late 1970s and throughout the 1980s.

Redeploying U.S. Forces

The REFORGER exercises (REturn of FORces to GERmany) began in the late 1960s to deflect political pressures and reduce the number of American soldiers in Europe. Balance-of-payment problems, exacerbated by overseas spending to sustain the Vietnam War, intensified political demands to reduce troop levels and shift the burden of mutual defense to European nations, especially Germany. In response, the West German government accepted minor withdrawals of U.S. troops in the late 1960s, increased its financial contribution by accepting a series of agreements to offset U.S. costs, and initiated the Modernization of United States Facilities (MOUSF) program.[1]

As American military strategists faced the 1970s, they undertook a reexamination of the geographic position of U.S. forces, realizing that troop deployment had more to do with history than with current strategic needs. U.S. troops remained concentrated in southern Germany, the area assigned in 1945 as the U.S. zone of occupation. By the 1970s West

German military forces could assist in an effective defense of that region. Moreover, if an attack came, Soviet and Warsaw Pact forces might just as readily strike at the north German plain as at positions in the south. In the north, British forces had been reduced out of economic necessity, and they and the Belgian forces responsible for defending the region were thinly stretched. The open northern terrain invited a rapidly moving mechanized attack that might overrun Western Europe before U.S. and other NATO forces had time to deploy.

The new line of strategic thinking contended that the United States could enhance its contribution to NATO and simultaneously reinforce the credibility of its commitment to defend against a Soviet attack by stationing troops where a potential attack was most attractive.[2] The strategic plan that grew out of this reconsideration led to two major events. First, it prompted the redeployment to Germany of elements of two divisions stationed in the United States under the dual-basing plan. Second, it brought about the construction of a new garrison in the northern German community of Garlstedt to accommodate one of the redeployed units.

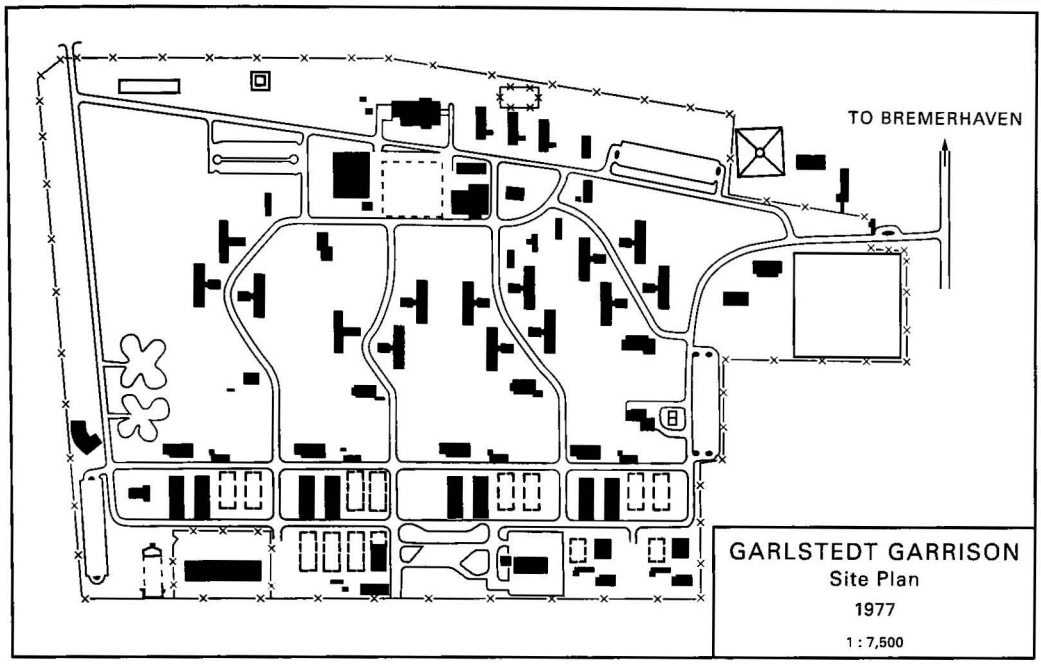
Garrison in Garlstedt

Planning to reposition Army combat forces in northern Germany began during the "tooth-to-tail" debate in the early 1970s. Secretary of Defense James Schlesinger decided to redeploy combat brigades from the United States to Germany beginning in fiscal year 1975. The Army assigned one brigade of the 2d Armored Division to Germany in 1975 (Brigade 75) and one brigade of the 4th Infantry Division (Mechanized) in 1976 (Brigade 76). In March 1975, Brigade 75 deployed to temporary positions in the major training areas controlled by the United States Army, Europe (USAREUR)—Grafenwöhr, Hohenfels, and Wildflecken—all in the area over which NATO's Central Army Group exercised responsibility. Brigade 76 moved into Wiesbaden Air Base, which was also in the Central Army Group's area.[3]

Between 1974 and 1976, and paralleling the repositioning of the brigades, the United States engaged in multilateral discussions with the West Germans, the British, and the Belgians that led to the decision to construct a new garrison. The location chosen, near Garlstedt, thirty miles south of Bremerhaven in the area defended by NATO's Northern Army Group, would become the permanent home for Brigade 75 from the 2d Armored Division. (*Figure 5*) It would include a brigade headquarters and headquarters company as well as a support battalion that would be permanently reassigned from the United States to West Germany. The plan called for several other units to be deployed on a temporary basis and rotated every 179 days with replacement units from the United States. Ultimately, the plan for units on temporary assignment was dropped, and all elements of the brigade took permanent station in Garlstedt.[4]

The project had high political visibility and endorsement. President Gerald Ford and West German Chancellor Helmut Schmidt signed a

Figure 5: Site Plan of the Garrison in Garlstedt, 1977



cost-sharing agreement in mid-July 1976 for the construction of the new facilities in Garlstedt. The Federal Republic agreed to pay Deutschmark (DM) 171.2 million (about $68 million at the prevailing exchange rate) for the construction of permanent facilities such as troop billets; dining halls; officers' quarters; and facilities for supply, maintenance, administration, and utilities. This represented about half the anticipated costs of the complex. The United States agreed to pay the costs for facilities that the German Army would not normally construct for its soldiers, who were stationed close to home where community facilities existed. Amenities such as an open mess hall; a chapel; and athletic, recreational, and community service facilities received the label "U.S. peculiar" and were financed with appropriated funds. In addition, USAREUR programmed 1,027 units of housing for the families of U.S. soldiers, to be funded by the United States and built by German civilian contractors under a build-to-lease arrangement.[5]

During the negotiations for the Garlstedt garrison, the Europe Division (EUD) provided technical assistance to USAREUR concerning the planning. In October 1975 EUD arranged meetings with the *Oberfinanzdirektion* (State Financial Office) of Hanover to discuss plans for housing U.S. troops temporarily in renovated structures. Late that month EUD received $4.3 million in construction authorization from the secretary of defense's contingency funds to begin design on facilities for Brigade 75.[6]

Priorities kept changing. In April 1976, when USAREUR and the West German military decided to put Brigade 75 into the area permanently

rather than temporarily, the master plan that EUD developed had to be modified. Revisions included eliminating several maintenance complexes but adding a club for noncommissioned officers, an elementary school, and a high school.[7] At the end of April 1976, the West German ministries in Bonn sent a letter to the *Land* (state) government of Niedersachsen (Lower Saxony), where the construction would take place, requesting approval to solicit bids for the project.[8]

From the start, planners were conscious of the importance of public relations to the success of their project. Although the Garlstedt area had long been a military range and training site, the German population prized the heath around it for recreation and open-air activities. U.S. troops had never been present in the area, and the West German government expected resistance to the new military installation. Officials therefore chose to reveal the plans for the garrison by degrees to give the local population time to adjust. The concern was justified. By spring 1976 German opponents of the planned garrison had gathered 40,000 signatures on a protest petition, and in May a human chain containing 75,000 to 100,000 protesters formed around the proposed construction site.[9]

Plans went forward. On 23 September 1976, the *Oberfinanzdirektion* of Hanover opened the first bids on construction contracts for the troop facilities in Garlstedt. A month later the state legislature in Lower Saxony formally approved the stationing of a U.S. brigade in the region, the last formal endorsement that the project needed. Sensitive to the opposition that the project had generated, the legislature directed the state government to ensure that "the legitimate rights of the population of the country are safeguarded to the greatest extent possible." As a spokesman for the government put it, the stationing depended upon "safeguarding the environment and ensuring the continued utilization by the people of adjacent recreational areas."[10]

Mindful of public concern regarding the environmental impact of the construction, the contractors erected special fences, ten feet high, to protect two well-known prehistoric graves located near the new installation. They also spent more than DM 4 million ($1.6 million at the prevailing exchange rate) to restore open areas to more general use by removing undetonated ammunition, some of which dated back to World War I. The removal, begun in August 1976, eventually covered areas adjacent to the installation at an estimated cost of an additional DM 16 million ($6.35 million). Workers removed more than thirty tons of dud ammunition from the sands of the surrounding heath.[11]

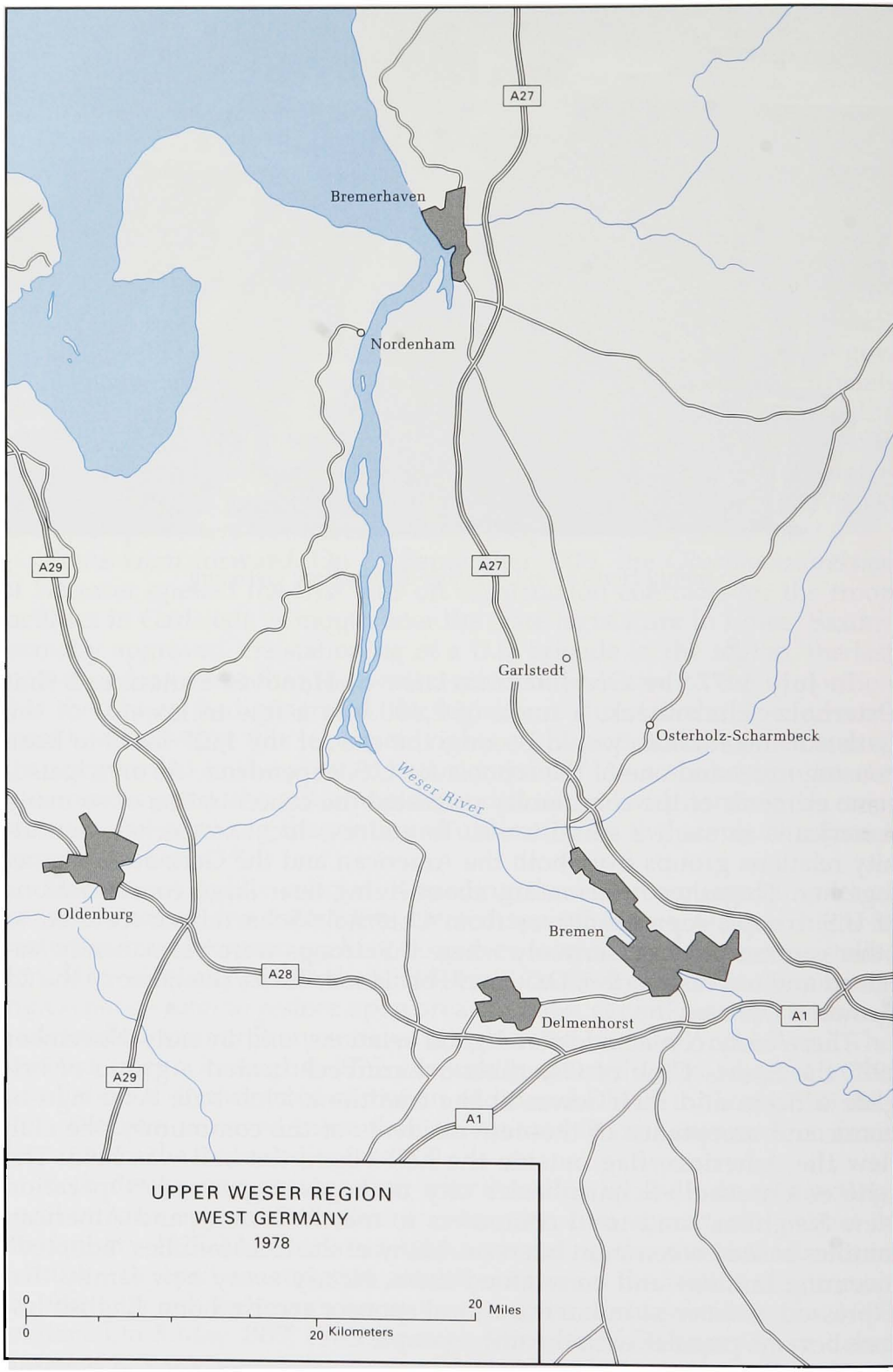
Both design and construction were handled by indirect contracting. Local officials approved the first construction contracts for the project in late January 1977, and workmen began preparing the site in Garlstedt in February. In April construction actually began on the largest single project, fourteen enlisted men's barracks and three dining facilities for 2,800 soldiers. On 5 May 1977, West German Minister of Defense Georg Leber hosted U.S. Secretary of the Army Clifford L. Alexander in a formal cornerstone-laying ceremony at the construction site.[12]

Family Housing in Osterholz-Scharmbeck, Germany

In July 1977 the *Oberfinanzdirektion* of Hanover announced that Osterholz-Scharmbeck, a town of 2,400 just a few miles east of the Garlstedt installation, would become the site for the 1,027 build-to-lease housing units and one of the schools for U.S. dependents. As anticipated, some elements of the community protested the concentration of so many Americans in such a small town. To address local concerns, community relations groups from both the American and the German sides met together. To gather information about living near large concentrations of U.S. troops, representatives from Osterholz-Scharmbeck traveled to other communities in Germany where U.S. troops were permanently stationed and to Washington, D.C., and Fort Hood, Texas, the home of the 2d Armored Division.[13]

These early contacts fostered good relations, and in early November 1977 the Sports Club of Osterholz-Scharmbeck hosted a group of brigade officers and their wives at the traditional club ball. As a sign of honor and acceptance of the new residents of the community, the club flew the American flag outside the hall where the ball was held. The wife of Osterholz-Scharmbeck's city manager organized "Operation New Neighbor" and used computers to match German and American families based on common interests. Many of the local families "adopted" incoming families and entertained them. Nearly every new family that expressed an interest in having a local sponsor received one. English lessons became popular with the townspeople.[14]

On 5 December 1977, officials laid the cornerstone for the housing units in Osterholz-Scharmbeck. (*See Map 28.*) The new accommodations


A27
Bremerhaven
Nordenham
A29
A27
Garlstedt
Osterholz-Scharmbeck
Weser River
Oldenburg
Bremen
A28
Delmenhorst
A1
A29
A1
UPPER WESER REGION
WEST GERMANY
1978
0
20 Miles
0
20 Kilometers

Map 28

(589 apartments, 425 row houses, 12 duplexes, and 1 single-family house) were interspersed among existing housing at six locations in the community. To avoid creating an American "ghetto," the planners selected designs similar to the German houses in each neighborhood.[15]

To limit the impact of the U.S. military presence on the community of Osterholz-Scharmbeck, USAREUR planned a minimum level of support for the new living area. Troops and families could use the shopping facilities in nearby Bremerhaven, including a post exchange and a commissary. The build-to-lease program in Osterholz-Scharmbeck included a multiuse building containing an Army Community Service office, child care and dependent youth activity centers, a commissary annex, an Army and Air Force Exchange Service (AAFES) pickup point, a *Stars and Stripes* bookstore, and limited facilities for the sale of beverages and merchandise. The complex also had four outdoor multipurpose recreational courts (for basketball and tennis) and a fifty-car parking lot adjacent to the community center.[16]

At the Garlstedt installation, the soldiers and their families could find a bowling alley, a chapel, a theater, a barber and beauty shop, and a bank. Garlstedt also had its own recreation center and indoor and outdoor athletic facilities. All these facilities, which USAREUR approved for construction in December 1977, were built with U.S. funds as enhancements to the quality of life for U.S. service personnel.[17]

By August 1978 EUD's Northern Area Office, working through a resident office in Garlstedt, had supervised the completion of $26 million of construction, including the fourteen barracks buildings. Despite delays occasioned by an unusually wet summer, the prefinal inspection of the first barracks building occurred on 5 July 1978. Communications facilities for telephone and television advanced as planned, and in September a microwave link between Garlstedt and Bremerhaven was fully operational. That same month the Armed Forces Network Television began transmitting its programs to the area. Telephone circuits connecting the caserne with Fort Hood, Texas, became available after the advance elements of Brigade 75 took up residence.[18]

The decrease in the value of the dollar from DM 2.56 to DM 1.85 between 1976 and 1978 created financial problems for the construction in Garlstedt. To cover the shortfall at the end of the 1978 fiscal year, USAREUR had to apply about $5.5 million from funds earmarked for base operations directly to the U.S.-funded part of the construction. With funding secure, the brigade headquarters and headquarters company and the 498th Support Battalion began moving into their new permanent facilities in Garlstedt. The first units of the 2d Armored Division, about 200 people, moved into the installation in September 1978. The first dependent family moved into one of the newly constructed housing units on 16 October. The following day, German Defense Minister Hans Apel and Secretary of Defense Harold Brown participated in a formal ceremony transferring the facility to the United States.[19]

The mayor of Osterholz-Scharmbeck personally greeted the first American family with traditional German gifts: a loaf of brown bread,

a filled shaker of salt, and a new one-pfennig piece for good luck. By the end of 1978 a total of 282 family housing units were occupied and 410 more were ready for occupants. Interim support facilities opened in Garlstedt, and AAFES, Europe, opened a snack bar in a truck. The community center that eventually housed these and other activities opened in 1979.[20]

Because of construction delays, special arrangements had to be made to have schools for the American children by the opening of the academic year in the autumn of 1978. A leasing arrangement with a local German school provided eleven rooms in Osterholz-Scharmbeck for grade school classes during the autumn term; high school students had to travel to the Department of Defense dependent school in Bremerhaven for the first semester. On 1 January 1979, an elementary and high school complex of six buildings officially opened in Osterholz-Scharmbeck.[21]

American medical facilities were expanded to accommodate the growing community. Construction of a clinic at Garlstedt Caserne fell behind and opened only in March 1979. In the early 1980s the military hospital in Bremerhaven increased its staff, and its capacity rose from twenty-five to seventy-five beds.[22]

Several unique characteristics distinguish the Garlstedt project, making it difficult to use as a model for any other undertaking. From the outset it had the entire weight of the West German political and military establishments behind it. Few projects commanded the level of attention evident in the very fact that the U.S. president and the West German chancellor signed the agreement authorizing the project in July 1976. Funding came directly from the Federal Republic, a factor that gave the project two advantages in the early phases. First, German-funded elements were easier and faster to initiate, execute, monitor, and release to the American users than dollar-funded projects. Second, the American statutory, regulatory, administrative, and technical legal requirements that often delayed dollar-funded work did not apply where Deutschmarks were used.

The project also benefited because most buildings in Garlstedt used existing, off-the-shelf designs, a one-time advantage that facilitated early start of construction. From the beginning the *Oberfinanzdirektion* of Hanover had sufficient personnel to handle the volume of work that Garlstedt entailed. USAREUR's middle- and top-level management devoted time and talent to the project, underscoring the importance and urgency of the endeavor in the minds of the German authorities. EUD also gave top priority to the project, assigning its most experienced and qualified German engineers and its most proficient German-speaking American employees to the work. All the construction took place in a relatively limited geographic area and consisted of repetitive structures. The combination of these factors certainly contributed to the Garlstedt project's success.[23]

By February 1979 the coordination between EUD, USAREUR, German government agencies, and civilian contractors had produced facilities for 4,000 troops of the 2d Armored Division, Forward. Establishing the new

home for the brigade took less than two years from the start of construction, though not all the support facilities were complete. In October 1978 the installation had been formally dedicated as General Lucius D. Clay Caserne in memory of the former commander in chief of U.S. forces in occupied Germany and Berlin. General Clay's efforts on behalf of the Germans, especially during the Berlin Airlift of 1948–1949, made him revered in Germany; naming the caserne after Clay paid fitting tribute to the cooperation between German and American authorities in the creation of Garlstedt.[24]

Forward Stationing in Vilseck

The repositioning of American combat units to northern Germany was one manifestation of new strategic thinking that developed in the 1970s. An extension of that thinking, forward stationing, became evident in the 1980s. The concept was simple: Move U.S. troops out of areas west of the Rhine to positions close to the border with East Germany and Czechoslovakia, points at which the Soviets might launch a preemptive ground attack. Although formulated in the mid-1970s, the strategy of forward stationing gained allied and West German approval only in the early 1980s.[25]

The new strategy and repositioning of troops meant increased construction to support the consolidation of armored and infantry units around Vilseck and Hohenfels, northeast and southeast of Nuremberg, respectively. Design began in the early 1980s on operational and support facilities. When the chief of construction, John Blake, first visited Vilseck in 1981, he saw "Sleepy Hollow," a quiet, rural community with little activity. All that changed with the beginning of construction in 1985, starting with two buildings for battalion headquarters.

In 1987, as a part of USAREUR's Total Force Modernization program, the first elements of a planned five battalions of VII Corps (2 armored, 1 mechanized, 1 field artillery, and 1 forward support) began to move into Vilseck. One of the innovative construction techniques applied during the work in Vilseck involved a school begun in March 1987 and completed in August of 1988. The building contained about forty classrooms, but according to Walt Bogdanow, chief of EUD's Vilseck project office, they were "not at all your standard square classrooms." The building "looks like a ship's screw" and used cast-in-place concrete, a technology that Bogdanow described as "very time-consuming" but one that allowed construction of an unusual design. The school also had masonry work exposed on exterior and interior walls.[26]

By 1989 EUD had completed or had plans for sixty projects related to Vilseck with a construction value exceeding $300 million. In the Vilseck project office an on-site force of eleven engineers and technicians supervised 30 projects, including 6 headquarters buildings; 7 maintenance facilities; 8 barracks buildings; chapel; fire station; police station; 5 recreational facilities; and 882 factory-built housing units, of which 225 were

In 1987 U.S. military personnel moved into newly constructed facilities in Vilseck, Germany, northeast of Nuremberg.

already occupied. Projections called for an increase in the size of the Vilseck military community from 3,000 to more than 10,000 people by 1992.[27]

All this activity in Vilseck took place in an area of about two square miles, making the coordination of contractors and work crews a major concern. The Vilseck military community, which had to continue in operation throughout the construction, had to be included in the coordination effort. Because there was essentially only one way into and out of the post, the construction turned people's lives upsidedown.[28]

One of the most difficult and disruptive aspects of the construction was the installation of district heating, a system that had not been a part of the original design. The introduction of this heating system rather than coal-fired boilers involved changing all the specifications. Vilseck's director of engineering and housing started supervising the district heat system, but EUD took it over midway through the work. The district heat lines were two feet wide and ran in all directions from the boundary of the post to a main heat substation. Excavations for them cut across nearly every road on the complex.[29]

With its potential for disruption of daily living, construction in Vilseck could have been a public relations disaster, but it was not. According to the area engineer in the Nuremberg Area Office, Lt. Col. Grosvenor W. "Bud" Fish, Jr., much of the credit for making the Vilseck project work smoothly belonged to Capt. Kent Henson, the project office's liaison officer to the military community.[30]

Henson met daily with Vilseck community officials to keep them apprised of the status of construction. He participated in weekly community staff meetings and a monthly meeting with the community commander; Blake frequently traveled from Frankfurt to participate in the monthly meeting. Henson also attended meetings with each of the housing communities on the post to give the soldiers and their families the latest information about road closures or utilities disruptions. Henson's efforts notably improved EUD relations with the military community.

Problems arose in coordinating the construction with the surrounding German community. As Bogdanow noted, "The forest belongs to the German government even though it is on a U.S. post. We just basically rent the land.... They've got rights to say what happens to their trees, what happens to their soil." The Germans also exercised the right to say what happened to their birds. When shore swallows—birds on the German endangered species list—were found nesting in one of the open storage areas, construction stopped until the fledglings had left the nest. The stoppage delayed the project and the contractor became eligible for payments to cover his costs.[31]

As the tempo of construction increased through 1989 and into 1990, Blake observed that Vilseck had changed from Sleepy Hollow to "probably the biggest concentration of work that we've had since I've been in Europe.... We have overhauled every square inch of Vilseck." One of the Vilseck project officers, Doug Sommer, marveled, "Vilseck has gotten one new of about everything that you can think of."[32]

Supporting New Weapons Systems

Late in the 1970s the Army began to introduce a series of major new weapons systems that required enhanced facilities—the AH–64 Apache attack helicopter, the Black Hawk troop transport helicopter, the Abrams M1 tank, the Bradley armored personnel carrier, and the Patriot air defense missile. Nearly simultaneously, planning also began for the Air Force's Ground Launched Cruise Missile (GLCM) and the Army's Pershing II missile. The EUD commander, Brig. Gen. George Kenyon "Ken" Withers, Jr., knew that one of the division's main tasks early in the 1980s would be "to prepare the training ranges, the barracks for the soldiers who would man those systems, and any other facilities necessary to accommodate [the weapons'] introduction into Europe."[33] Withers had no doubt that this is what the chief of engineers, Lt. Gen. Joseph K. Bratton, wanted. He drew his conclusion from an offhand comment that Bratton had made during a visit to EUD in March 1981: "Ken, the CINC USAREUR [commander in chief, USAREUR] mentioned to me that he didn't want the Corps of Engineers responsible for the delay in fielding any major weapons system in Europe."[34]

In fiscal year 1980 USAREUR received $1.7 million from Congress to provide realistic practice firing ranges in Grafenwöhr and Wildflecken to train crews manning the Abrams tank and the Bradley armored personnel

Apache Attack Helicopters in a Maintenance Hangar in Crailsheim, Germany

carrier. EUD acted as the construction agent; Louis Berger International designed the new ranges; and the 18th Engineer Brigade provided troop labor for construction.

Upgrading the Ranges

EUD planned to procure materials for construction at the Grafenwöhr range in April 1981, with completion of design programmed for the following autumn. USAREUR scheduled the 18th Engineer Brigade, under command of Col. James W. van Loben Sels (who became EUD commander in 1984), to begin construction in April 1982. Aside from the valuable training for engineer troops that the project offered, the 18th received the assignment because EUD could not find at a reasonable price a private contractor willing to work on the range given the danger of unexploded ordnance.[35]

Working in the Grafenwöhr live-fire range necessitated removing the unexploded ammunition that had accumulated. Continuous use of the range during the renovations prompted Louis Berger International to limit its soil investigation to topographical studies from the air. Ground verification could only be done on Sundays, when the range was not in use. Once on site, the 18th Engineer Brigade found shortcomings in the design

based on its own analysis of the soil. Much of the area occupied by the Grafenwöhr range was a peat bog with a high water table. The engineer brigade's inspection showed that the ground, a mixture of peat and sand, flexed considerably under weight. Any rupture of the peat layer caused the sand to liquefy and the ground to sink. The brigade requested design modifications and recommended a geotextile fabric, generally called a filter fabric, which would allow water to pass through yet contain and stabilize the sand. The designers incorporated the filter fabric, allowing much of the bog to be reclaimed and used for roads, target areas, defilade firing positions, and parking.[36]

In September 1981 other changes in design for the range arrived, adding roads at two ranges, changing the elevations of target pits, and modifying the orientation and location of buildings. These changes had not been adequately coordinated with the German forest service, which disapproved many of the relocations when construction began. The 18th Engineer Brigade received the changes so late that delays in construction were inevitable.[37]

The procurement of materials and equipment ran particularly smoothly in Grafenwöhr because, starting early in the planning process, the 18th Engineer Brigade and EUD cooperated to develop effective procedures for tracking procurement of materials. As they identified problems, they moved quickly to avoid possible bottlenecks. They also prevailed upon the deputy commander in chief of USAREUR to keep the U.S. Army Contracting Agency, Europe, working overtime to maintain the procurement schedule. Despite the quantity of materials involved, worth about $17 million, procurement always kept pace with construction, and the appropriate supplies remained available at each stage of the work.[38]

Between 1 April and 30 November 1982, the 18th Engineer Brigade placed seventeen moving target systems totaling more than 14,500 feet across six ranges. It created 549 concrete target pits that held electrically operated targets depicting vehicles and personnel that popped up automatically. The brigade also lay over thirty miles of gravel roads for use by tanks practicing firing and for maintenance of the targets themselves. Wherever tanks turned on the roads, the engineers installed concrete pads to limit damage. The brigade furnished the Grafenwöhr range with 7 buildings for billeting troops, 4 dining facilities, and 5 target maintenance buildings with running water and latrines. These facilities reduced the time that soldiers spent commuting to the range and made maximum use of their training time. Five range control towers and one observation tower helped soldiers monitor range activity. Five parking areas, each providing 8,900 square feet of concrete surface, accommodated the tracked vehicles, and nine gravel parking areas took care of wheeled vehicles. The engineers installed 13,000 feet of fencing, 1,600 feet of concrete roads, and more than 200 culverts for drainage.

Grafenwöhr was the largest troop construction project ever attempted in peacetime. At its peak the project employed over 4,000 soldiers in seven reinforced engineer battalions.[39] Private contractors handled work too

Pop-up targets were a part of the modernization of the Grafenwöhr training range during the 1980s.

technically sophisticated for the troops, and EUD project staff coordinated the construction to minimize the time that the range would have to be closed.[40] The contractors built water wells, programmable control units to regulate the targets, self-propelled trolleys for carrying targets at speeds from ten to twenty-five miles an hour, and electrical transformer stations. They also made the automated targets sensitive to the thermal-imaging night sights that the combat vehicles used. The targets popped up according to a command and control system that could be programmed for a variety of situations.[41] The moving targets provided more realistic gunnery training than in the past. Stationary firing positions and roads for firing while moving provided training for both defensive and offensive situations. Combat commanders reported that their range training efficiency improved by 50 percent during the first year of exercises on the upgraded range.[42]

EUD made adjustments for 1983 based on the experience gained during the first year. A single supplier was chosen for the targetry and computer-based control units, reducing costs and eliminating problems of installing differing systems. By 1985 Grafenwöhr had become the most modern firing range for tanks and the largest training area in Europe. In addition to improving the range, the redesign aimed to conserve energy wherever possible and to reduce noise levels.[43]

In 1987 EUD initiated work on a prototype for a test firing range that would use space efficiently and employ a new material. Standard rifle

ranges in the United States, where space was plentiful, were built thirty yards wide. In a test conducted between 17 November and 10 December 1987, EUD set up the prototype of the new range with four firing lanes, each 5.5 yards wide. The prototype used shock-attenuating concrete to cover the target banks instead of the customary wooden covers. This substance consists of an aerated concrete mixed with small steel fibers, developed for use in facilities designed to train for military operations in urban terrain. It offered four advantages over wood. First, it limited ricochets, a critical factor with ranges set so close together. Second, it withstood the repeated impact of ammunition much better than wood. Third, it was easier to replace than shattered wooden panels. Fourth, it absorbed more sound. These tests prepared the way for contracts in 1988 and 1989 to build eleven new rifle ranges at a cost of $30 million.[44]

The Army invested large sums of money during the 1980s in a second firing area, Wildflecken, northeast of Frankfurt and directly north of Würzburg. The local populace's objections to the noise level at the firing ranges held up work in Wildflecken for years, but in early 1989 EUD began work, combining troop construction—battalions of the 18th Engineer Brigade—with contract construction for the more sophisticated work.

The work in Wildflecken—to provide training areas for Bradley personnel carriers and Abrams tanks—included 7 moving targets, 73 stationary vehicle targets, and 136 personnel targets, plus defilade firing positions and the associated roads and turning pads. With the approval of the West German government, tree cutting for the project began in March 1989. By April EUD engineers had discovered serious design flaws: All five of the new Bradley battle positions and three of the defilade positions left the vehicle without a clear line of sight to the moving targets. The design had to be changed. By the end of the 1989 fiscal year, the project was only 20 percent completed.[45]

USAREUR needed to continue development of Grafenwöhr and Wildflecken because so many of its forces were stationed in urban areas and had no training space. As German cities expanded, they enveloped installations that had once been in the countryside. Because Grafenwöhr remained one of the few relatively open areas, more rifle firing ranges were concentrated there, in addition to the tank ranges. EUD continued to oversee work related to Grafenwöhr to the end of the decade, and similar work in Wildflecken extended into the 1990s.[46]

Combat Maneuver Training Center in Hohenfels

The Army was well aware that not all future combat would take place from tanks and armored personnel carriers; much of it was likely to occur in urban settings. To provide the troops in Europe with training to prepare them for street-to-street fighting, USAREUR developed the combat maneuver training center in Hohenfels, a small town situated at the southern apex of a triangle formed with Nuremberg and Grafenwöhr as the western and

Training at the MOUT village in Hohenfels, Germany, prepared troops for urban combat.

northern apexes, respectively. USAREUR hoped to offer through the training center force-on-force training under conditions closely resembling those at the National Training Center in Fort Irwin, California. The center in Fort Irwin had 640,000 acres, allowing it to put about thirty-six battalions a year through training. The training terrain in Hohenfels extended over only 40,000 acres, 6 percent the size of Fort Irwin, but the program for Hohenfels called for training fifty-two battalions a year.[47]

To overcome the lack of space in Europe, USAREUR decided to concentrate sophisticated facilities for training combat maneuvers in Hohenfels, just as it had concentrated facilities in Grafenwöhr and Wildflecken for training the gunners and crews in armored vehicles. Hohenfels became a complex that provided realistic, stressful training at the level of the battalion task force. It combined an "opposition force" permanently stationed at the facility with the use of the multiple integrated laser engagement system and the integration of combat support and combat service support. The opposition force's familiarity with the terrain and the exercises could make the training forces "pay" for any mistakes that they made during the exercises. Each commander received a detailed, computerized assessment of how soldiers performed at any given point in a mock battle. The assessment, which included tapes of the radio traffic during the battle, could be reviewed in detail to improve future performance.[48]

As a key element in the training in Hohenfels, USAREUR projected the creation of a mock village called the MOUT (military operations in

urban terrain) site. The village, constructed in 1989, resembled a typical German town, complete with a church, a cemetery, a city hall, a barn, and even buildings in rubble as if they had been bombed. The design called for hideaways, corners, and creep-through sewers to allow soldiers to infiltrate from one area of the town to another. The architecture and the landscaping of the mock city won it an honorable mention in the chief of engineers' Design and Environment Awards Program for 1989. The buildings were also attractive enough from the outside that the local media described them as ready to occupy. Nuremberg's area engineer, Colonel Fish, under whose office the project was executed, claimed that "all the local mayors offered to trade their buildings" for those in the MOUT village. They were only shells, however, designed to present the training soldier with situations that might arise in urban combat.[49]

In addition to the MOUT village, construction in Hohenfels included a storage and maintenance warehouse, also completed in 1989, that featured 24 covered loading docks, 32 concrete vehicle parking areas, and more than 1,400 square yards of storage space. From this facility the vehicles and personnel from incoming units were to be outfitted with the equipment that allowed laser tracking of their movements during exercises. The operations center for the range housed DM 18 million ($11.14 million) worth of high-tech equipment in a DM 5 million ($3.09 million) building. Completed during the summer of 1990, it controlled the field exercises over the entire range. Using the sensor equipment carried by the troops and vehicles, the operations center could monitor and record all movements and provide a record of the training. USAREUR anticipated another 75 percent growth in the program in Hohenfels during the early 1990s.[50]

Modernizing Operational Facilities

The training facilities necessary to develop proficiency in the new weaponry had to be supplemented by new and improved operational facilities that directly supported the deployment and day-to-day activity of combat and combat support units. Such operational facilities involved surfaced parking areas, airfields and associated buildings, ammunition and equipment storage areas, specialized troop housing such as that needed for rotating border duty, and operations control buildings.[51]

The poor quality of such facilities, in which the service personnel worked every day, and the inadequacy of maintenance facilities throughout Europe had contributed to the deterioration of equipment during the 1970s. Even simple maintenance could not be performed in the mud; as a result, soldiers deferred routine maintenance until problems became serious and costly to correct. A survey conducted in 1976 of 1,800 maintenance facilities in USAREUR indicated that 98 percent were substandard because they lacked space, running water, heat, toilets, and lift capacity. Many of them also failed to meet Army safety standards.[52]

Since the late 1970s, EUD had been involved in efforts under a program called Pre-positioned Organizational Materiel Configured to Unit

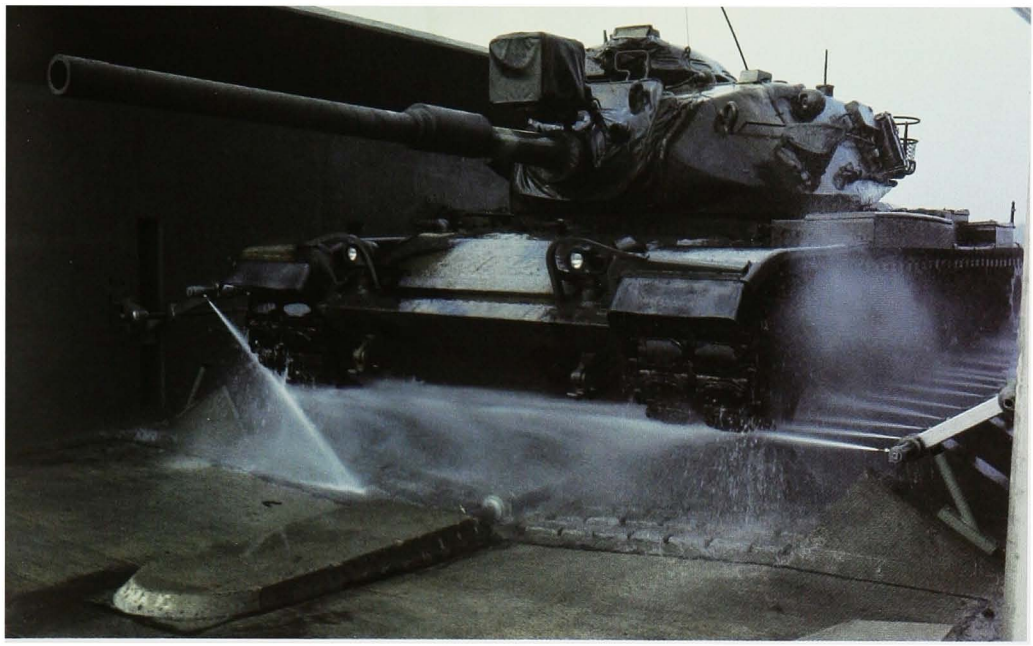
Sets (POMCUS) to provide enhanced maintenance facilities. During the 1980s USAREUR undertook to assure adequate maintenance facilities for its new and complex modern equipment. The Facilities Modernization Program formed one part of this effort. USAREUR initiated it in the late 1970s for the rehabilitation, modernization, and alteration of substandard maintenance facilities. Under this program, Military Construction, Army (MCA), funds could be used for any and all maintenance and repair work, not just for work that involved new construction, as had been the case with earlier programs. In other words, MCA money could be applied to reduce the backlog of maintenance and repair, normally funded only by money for Operations and Maintenance, Army (OMA). In addition, the program permitted facilities to be completely replaced when estimates suggested that to be more economical than rehabilitation. Money from the Facilities Modernization Program could also be used to satisfy safety, environmental, or energy conservation requirements.[53]

Even this special program was not enough to counterbalance all the years of neglect. During his first two years as commander in chief of USAREUR, General Frederick J. Kroesen became convinced that more had to be done to fund operational facilities. On 1 April 1981, Kroesen sent a report to the Senate Armed Services Committee titled "Living and Working Conditions in United States Army, Europe." The booklet, prepared by USAREUR's Office of the Deputy Chief of Staff, Engineer, detailed the deplorable conditions of the facilities in which U.S. troops lived and worked. General Kroesen underscored his concern and frustration in a cover letter to a member of that committee, Senator Gordon J. Humphrey:

> Senator Humphrey, I thank you for your interest, but I want you to know also that many of us in Europe remember any number of reports of this nature which have been submitted in the past years. I was personally responsible for one which was prepared five years ago. Each of those past reports was either staffed to death, filed for future reference, or ignored when budget formulation time arrived. We cannot afford to have that happen many more times or we will have no facilities left for sustaining the Army.[54]

The report had the intended effect, and Congress began to make money more available. The work undertaken under the Facilities Modernization Program continued, but additional programs now supplemented it. During the 1980s Kroesen's contention that proper facilities played a vital role in making both troops and modern equipment effective won increasing support among the leadership of the U.S. defense establishment.[55]

The new support generated by Kroesen's appeal to the Senate made possible the expansion of building programs, such as five new maintenance shops at Smith Barracks in Baumholder. The facilities provided over 9,500 square yards of space; drive-through capability for machinery;



Army engineers also constructed washracks for tanks, trucks, and other vehicles.

overhead cranes; carbon monoxide exhaust systems; and systems for heating and ventilation, compressed air, lighting, and power. The construction included access roads; paved parking areas; and an extension of the distribution lines of the existing heating, electrical power, and sewer and water systems. The design incorporated drainage and oil separators so that rain water running off the vehicle parking areas could be processed to safeguard the quality of the local ground water.[56] New construction included tank washracks that used high-pressure water nozzles to blast mud and grime off tank treads and undercarriages, high-pressure wash facilities for helicopters, and hot-point fuel spots that allowed helicopters to refuel without shutting off their engines.[57]

These modern facilities presented varying degrees of engineering challenge. Pouring acres of concrete holds little fascination, although its impact on troop morale was potentially high. Designing and constructing wash facilities that incorporated the pumps and pressurized water sprays to clean a tank or helicopter presented a greater challenge. Still, the greatest challenge frequently lay in making the facility truly usable. Richard Birner, a German engineer employed by EUD in the Nuremberg Area Office, explained the challenge: "[The average soldier] doesn't know anything about watts and volts and amperes ... [or] the strength of concrete. He knows how to push a button. But there [the challenge] starts already, because [one] soldier pushes the button with his foot and the other operates it the right way."[58] Designers had to ensure that the facility would operate even if misused, and designs were modified as the equipment

changed. In April 1982 EUD had to adjust its designs for washracks to accommodate the new Abrams tank and allow for more effective cleaning under the skirt. General Withers instructed his design staff also to incorporate suggestions from the commander of the 3d Armored Division, whose men were using the equipment.[59]

Overcoming the long-standing neglect took more than a few programs and a few years. In 1984, although a third of the U.S. Army was stationed in Europe, only 40 percent of the combat battalions maintained their vehicles in motor pools "with adequate hardstands; the rest were in the mud." The vice chief of staff of the Army proposed using troop labor to speed construction to change that condition. USAREUR quickly formed a "hardstand attack group" and gave it the mission of "getting the troops in Europe out of the mud." By late 1987 USAREUR had eighty-one projects in the hardstand-building program, construction valued at $147 million.[60]

In an effort to stretch the construction dollar and as a part of its mission to use new construction technologies, EUD experimented with roller-compacted concrete pavement as a new method of providing hardstands. The method, though new to Europe, had been used in Canada for about a decade and in the United States since the early 1980s. The name derives from the technique. Over a prepared surface a machine resembling the equipment used to lay asphalt dispenses under pressure a relatively dry, coarse concrete mix. Vibrators and rollers then pass over the concrete to compact it in place. Because the resulting surface is not as smooth as traditional methods yield, it cannot be used for highways or airfield runways, but is perfectly adapted to hardstands. In its use, speed was not only a virtue but also a necessity. The integrity of the concrete was compromised when the time between the preparation of the mixture and its application exceeded an hour. The process also promised cost savings up to 30 percent, attributable in part to the limited manual labor needed.[61]

In July 1986 engineers from the Europe Division and the Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi, supervised the pouring of a 2,400-square-yard test section of roller-compacted concrete in Kitzingen, West Germany, as part of a 19,000-square-yard hardstand. Because this was a relatively new process, it was not recognized by German construction regulations; and the West German government would not allow it to be incorporated into the standard bidding process when EUD let contracts. For months after the experiment in Kitzingen, EUD's staff worked with contacts in the German government ministries to devise procedures that would establish criteria to allow routine use of roller-compacted concrete in contracts for U.S. military construction in the Federal Republic. Initially, they could win no better an arrangement than to permit this process as a change order or as an alternate bid on a contract. Bureaucratic resistance to the new method slowed its application to construction projects. By 1989, however, EUD negotiators had gained new guidelines and the use of this method began to increase. The combined total of roller-compacted concrete used from fiscal year 1986 to 1988 amounted to over 58,500 square yards. In the first ten months

Roller-compacted concrete was used to construct hardstands in Kitzingen, Germany, in 1986 and 1987.

of fiscal year 1989, EUD awarded contracts totaling 340,000 square yards. All these contracts were awarded under the alternate bid procedure.[62]

In all, between 1981 and 1987 USAREUR spent approximately $766 million from its military construction budget and its operation and maintenance budget to improve the Army's maintenance facilities.

Patriot Missile Program

Like the Abrams tank and the Bradley armored personnel carrier, the Patriot missile represented a new level of technology with several advantages over its predecessors. The Patriot system offered medium- to high-altitude air defense using mobile ballistic missiles that could operate in all weather conditions. It required fewer pieces of equipment to operate than the systems it supplanted and therefore demanded less logistical support. It also required fewer people. The Nike Hercules had more than 1,000 soldiers in its basic firing unit, and the improved Hawk had 878 soldiers; whereas the Patriot battery was operated by 765 persons, although the number might vary depending on the number of firing positions at any given site. Being a missile with a conventional warhead, the Patriot also demanded fewer security and safety measures.[63]

Planning for the installation of the Patriot began in the late 1970s. By 1981 EUD and its NATO counterparts had initiated design and developed a schedule that called for construction to begin in 1984. General

Withers closely supervised the Patriot schedule because of the admonition from General Bratton not to let the Corps be the cause of any delays. Construction began in Giessen, north of Frankfurt, then in Hanau to the east, and later in Ansbach to the southeast. The program reached a milestone on 7 April 1982, when the first bids were opened for Patriot facilities; the first construction package was awarded at the end of May. Dexheim, Kaiserslautern, Giebelstadt, Illesheim, and Bitburg all eventually had Patriot batteries installed.

Design for the support facilities—the launching area, the administrative area, and the control area—in Giessen, Dexheim, and Kaiserslautern went to the architect-engineer firm of Georgi Reitzel. A former USACAG employee in the 1950s, Reitzel became a private contractor and won contracts on Nike and Hawk installations during the 1960s and 1970s. Louis Berger International, another company that worked on Nike and Hawk facilities, designed Patriot installations in Hanau and Babenhausen, a missile storage area in Münster-Dieburg, and administration and support facilities in Grossauheim.[64]

NATO and the United States conjunctively funded all the Patriot facilities. That is, NATO paid for the elements it deemed essential for war: the readiness and operations buildings; the systems maintenance building; the generator buildings with converters; paving, earthwork for the protective berms, and electrical systems for the control, radar, and launcher; the central missile storage area; and the facility for the direct support unit. NATO also paid for about 86 percent of the costs of a maintenance shop at each site and about two-thirds of the costs of the battery administration and battalion headquarters buildings. The United States funded the barracks and dining facilities for the enlisted soldiers manning the system, the remaining costs for the maintenance shop and the battery administration buildings, the nuclear-biological-chemical decontamination cell, storage for the basic load of ammunition, and defensive fighting positions.[65]

Unlike the older Hawk installations, which had very rudimentary facilities, the Patriot installations were built as fully functioning, almost independent posts. Each new Patriot facility had a small shop where soldiers could buy items for their immediate needs and living quarters that provided far more comfort than the open-bay barracks with cots at the Hawk sites. The facilities consisted of an engagement control station, a battery control group, emergency power equipment, radar equipment, and unmanned launchers. Each Patriot missile was mounted on a sixteen-wheeled articulated transport vehicle called a Hummtee (HEMTT, or heavy expanded mobility tactical truck), in which power passed to every wheel, making the transporter effective in almost any terrain. At the initial readiness point on the site, the missiles and transporters were positioned behind dense earthen berms with reinforced concrete walls. In the missile's raised and ready firing position, only a lightning rod rose higher than the missile itself.[66]

The Patriot installations required multiple contracts for design. For instance, EUD issued eighty contracts to architect-engineer firms for the

Patriot missile facilities, like this one in Hanau, were eventually located throughout Germany.

Patriot facility at the Bitburg Air Base. Design began in 1985, and the contractor broke ground for the construction in 1987. EUD turned over the facilities on 5 July 1989.[67] That same summer EUD turned over several other Patriot installations in Kaiserslautern. By the end of the decade, EUD had provided facilities for seven Patriot air defense artillery battalions and one brigade headquarters at a cost of $230 million, of which NATO paid about $130 million (56.5 percent) and the United States paid the rest.[68]

The introduction of other new weapons systems provoked animated protests in Germany, but installing the Patriot air defense system caused hardly a ripple within the local population.[69] The radar systems that governed each battery overlapped to provide a missile-defense umbrella for much of the West German territory. Although the American planners intended that the Patriot missile system replace the older Hawk air defense system, not enough Patriots had been installed by 1990 to blanket West Germany entirely; so NATO decided to upgrade and renovate selected Hawk emplacements as well. EUD continued to work on Hawk sites into the 1990s in close coordination with USAREUR and NATO.[70]

Cruise and Pershing Missiles

In contrast to the Patriot air defense system, the introduction into Europe of a new generation of intermediate range, surface-to-surface mis-

siles during the 1980s attracted widespread public attention and vocal protest. Two systems caused a dramatic uproar: the Air Force's Ground Launched Cruise Missile (GLCM) and the Army's Pershing II, a second generation of the Pershing missile stationed in the Federal Republic of Germany since about 1969. Unlike the Patriot, both the GLCM and the Pershing II were designed to carry nuclear warheads. The Pershing II was an improved version of an earlier ballistic missile, whereas the Cruise represented quite a different technology. The Cruise missile was a small, relatively inexpensive, self-guided, pilotless, miniature aircraft that could be programmed to fly low, underneath Soviet radar coverage, to a predetermined target. The GLCM, like the Pershing II and Patriot missiles, was a mobile system with two basic elements, a control module and a transporter-launcher.[71]

The pressure to station GLCMs and Pershing IIs in Europe came not from the U.S. government but from the member states of the Atlantic alliance acting through NATO. During the second half of the 1970s, the Soviet Union had modernized its arsenal with a powerful land-based surface-to-surface nuclear missile—the new Soviet SS–20, which had a 3,000-mile range and multiple warheads that could be independently targeted. It was also mobile and therefore more difficult to locate and destroy than earlier systems. From its new forward positions in Eastern Europe, the missile could reach targets in West Germany in twenty minutes. NATO allies, particularly the West Germans, became uneasy about possible Soviet tactical nuclear superiority over the United States in Central Europe.

To counter the Soviet threat, the NATO Council voted on 12 December 1979 to deploy several hundred Pershing II and Cruise missiles in Britain, Italy, Belgium, the Netherlands, and West Germany. If the Soviet Union failed to agree to an accord eliminating its SS–20 threat to Europe, the American missiles would be put into place beginning late in 1983.[72]

The Europe Division began preparing for the deployment of these intermediate range nuclear weapons in three of the five countries into which the weapons were to be introduced—Belgium, West Germany, and the Netherlands. On 27 July 1982, the division signed a technical agreement for the construction of the first GLCM installation. At an estimated cost of $50.2 million, NATO and the United States conjunctively funded the GLCM installation. EUD funded all support facilities (about seventy individual projects) and operational facilities, particularly those that NATO did not fund, such as fire protection, safety, and welfare facilities.[73]

The GLCM program lagged in fiscal year 1983 because of congressional delays in approving the design program for permanent facilities. The Air Force had made contractual commitments on the basis of the original schedule, and it asked EUD to help meet them. The deputy division engineer, Col. Donald E. Hazen, and the Northern Area Office engineer, Lt. Col. Kenneth W. Kvam, suggested that the division establish a program management office to concentrate exclusively on the GLCM projects. Kvam, in whose area much of the GLCM work would be constructed, would head the office. The division engineer, Brig. Gen. Scott B.

Smith, accepted the idea, even though it meant taking the unconventional step of dividing the Northern Area Office into two elements. Kvam would oversee the GLCM work and report to Smith through Hazen; Kvam's civilian deputy, Charles Schneider, would manage all other work and report to the chief of the Construction Division.[74]

Hazen and Kvam began to organize the new GLCM office in October 1983. Smith announced that "LTC Kvam is now a senior member of the EUD Staff. He is no longer speaking through Construction as the Northern Area Officer. He is now the Creek [code word for GLCM] Project Officer. Give him your full support."[75] During November and December Kvam selected people from headquarters and from the area offices to fill positions in the program management office and in resident offices at the GLCM sites. In February 1984 General Smith reported to the chief of engineers, General Bratton, that the "program management concept will successfully deliver a quality project to one of our most important customers, the Air Force." He added that the project "enhances NATO preparedness and has the potential to strengthen USACE's [U.S. Army Corps of Engineers] relationships with the Air Force."[76]

By the summer of 1984 the GLCM office established a "cradle-to-grave" tracking system that followed projects through design and construction on a monthly basis, analogous to what Brig. Gen. Norman G. Delbridge, Jr., commander of the Europe Division in the mid-1970s, had hoped to promote with his "big board." Each month the staff saw whether they were ahead, keeping pace, or falling behind the schedule established by the Air Force for completion of facilities. After the end of June 1984, project managers had 5 percent of the program completed or in construction, 55 percent in design, and 40 percent awaiting initiation of design.[77]

The GLCM projects continued to have both high public visibility and geopolitical sensitivity, factors that made keeping them on schedule of paramount importance. In fiscal year 1984 EUD performed 23 percent ($795 million) of its design workload and 6 percent (about $22 million) of its construction placement for the Air Force. The volume of work increased as the GLCM project progressed.[78]

Work began first in Belgium, then in West Germany, and finally in the Netherlands, all between 1983 and 1986. In 1983 engineers from the Europe Division began traveling to Belgium to work with local officials on the first GLCM site. Early in 1984 the division opened a resident office in Florennes, and in June the Belgian government formally signed the authorization for construction of the GLCM site in Florennes adjacent to a Belgian Air Force base. Starting with a staff of three, the Florennes Resident Office expanded over the next two years to thirteen people—nine engineers, two translators, a secretary, and a procurement clerk.[79]

The Florennes Resident Office first built prefabricated temporary living quarters, administrative offices, a dining hall, and shopping facilities for Air Force personnel. In July 1985 a security fence went up around the permanent GLCM site, and in August the first of the permanent construction began. In January 1987 EUD turned over to the 485th Tactical Missile

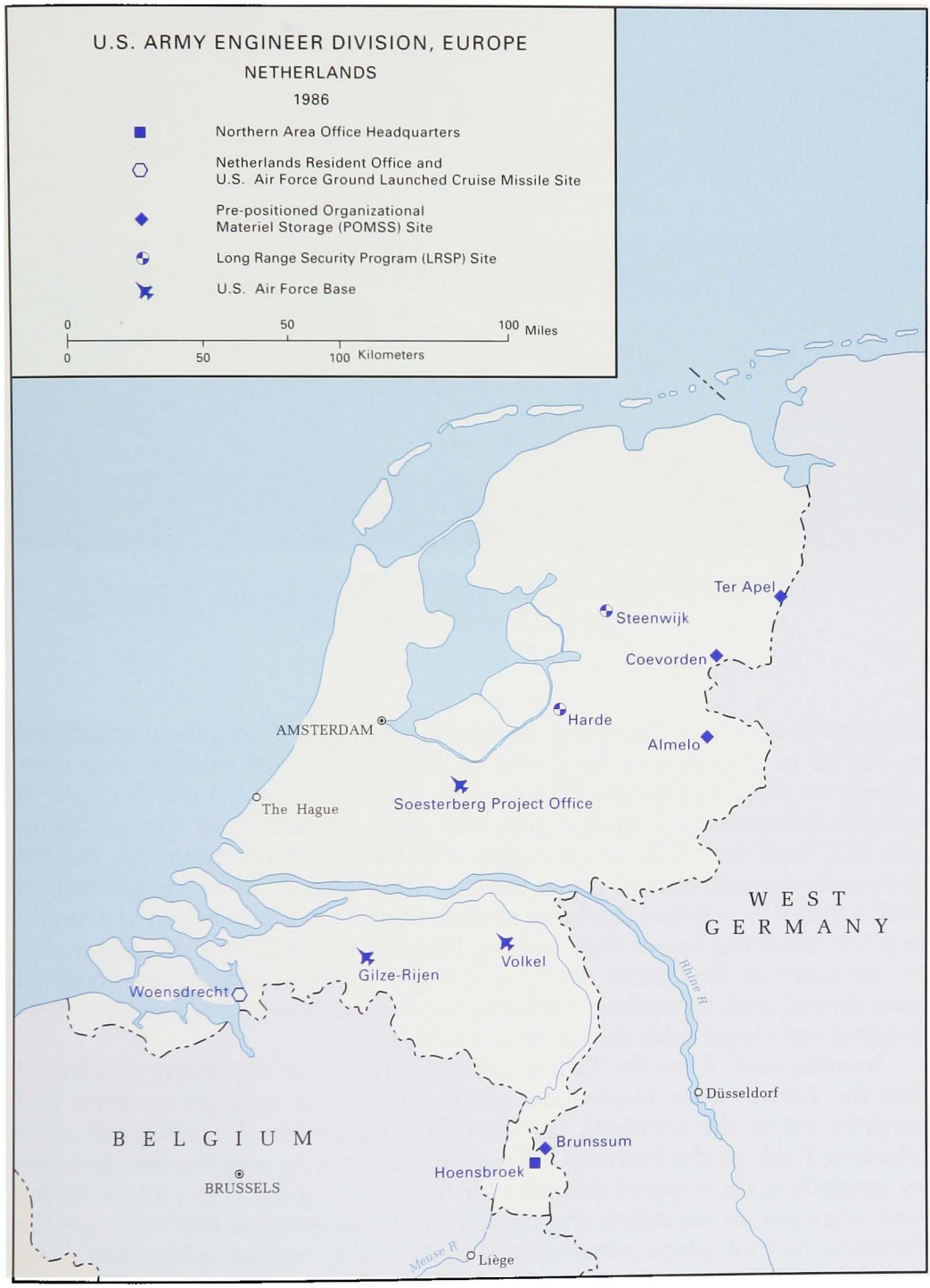
Wing the first permanent building completed at the site, the recreation center. Its opening provided the 1,000 personnel of the wing, already on site in the temporary living quarters, with a snack bar, a library, a weight room, a basketball court, and racquetball courts. By the end of 1987 the resident office had completed about thirty facilities, including dormitories, the electrical distribution system, and other facilities directly related to the missile's mission. EUD expected to award contracts for a commissary, a post exchange, a bank, a medical facility, and 600 off-base housing units with a child care center and school. Diplomatic discussions between the United States and the Soviet Union made the future of the Cruise missiles uncertain, prompting EUD to delay these awards.[80]

In the same period the GLCM work in Germany at Hahn Air Base lagged, and it became clear that the Air Force's 38th Tactical Missile Wing would not have the necessary facilities on schedule. To avoid disrupting the mission of the missile wing, resident engineer Rod Markuten secured permission to renovate an old aircraft hangar for the new GLCM system. Markuten had to work with a hastily prepared design, but the temporary construction began in March 1985 and was completed by September, allowing the missile wing to meet its mission deadline. In the spring of 1986 the Society of American Military Engineers gave Markuten the 1985 Tudor award, its highest prize, for his work at Hahn Air Base.[81]

When GLCM work in West Germany continued to encounter delays, EUD persuaded the government of the Federal Republic to let the division issue contracts directly. With the special attention given to these GLCM projects, the division overcame the delays, kept the program on track, and continued to meet the Air Force's deadlines. As the end of the 1986 fiscal year approached, EUD's 1987 design program for GLCM was about 90 percent complete. The work in Belgium neared completion; the work in the Netherlands was just beginning and programmed to last until 1991.[82] (*Map 29*)

The Air Force chose to furnish the GLCMs from the start with adequate service and maintenance areas and with newly constructed or renovated barracks, all designed specifically for the support of the weapons and the people who operated them. The units assigned to GLCM installations had family housing, schools, commissaries, and similar amenities explicitly conceived and programmed by the Air Force. By contrast, for the initial deployment of the Pershing II missile—which fulfilled a comparable military mission, had the same lethal characteristics, and enjoyed (or suffered from) the same political sensitivity—the Army made very few special preparations. The missiles, which had mobile launchers very similar to the GLCM, were simply deployed with existing military units. There was, as General Smith recalled, "a dramatic difference between the security support and permanence of the one compared to the other."[83]

The first battery of nine Pershing II missiles had been flown into West Germany and stationed in Mutlangen on 23 November 1983, just twenty-four hours after the West German Parliament had approved deployment. In the next year a total of fifty-four missiles arrived in the country, most


U.S. ARMY ENGINEER DIVISION, EUROPE
NETHERLANDS
1986
Northern Area Office Headquarters
Netherlands Resident Office and
U.S. Air Force Ground Launched Cruise Missile Site
Pre-positioned Organizational
Materiel Storage (POMSS) Site
Long Range Security Program (LRSP) Site
U.S. Air Force Base
0 50 100 Miles
0 50 100 Kilometers
Ter Apel
Steenwijk
Coevorden
Harde
Almelo
AMSTERDAM
The Hague
Soesterberg Project Office
WEST
GERMANY
Volkel
Gilze-Rijen
Woensdrecht
Rhine R.
Düsseldorf
BELGIUM
Brunssum
Hoensbroek
BRUSSELS
Meuse R.
Liège

Map 29

GLCM sites in Western Europe, such as Florennes, Belgium, included support and operational facilities.

stationed in southern Germany. To achieve the rapid deployment scheduled by NATO in response to the threat of the Soviet SS–20 missiles that were already in place in Eastern Europe, the Army introduced the Pershing II without extensive new design and with no construction of support facilities. EUD had very little involvement with their initial deployment, but the division's commitment of effort jumped dramatically after an accident in 1985. Three U.S. soldiers died and sixteen others were injured on 11 January in a fire involving one of the Pershing II rocket propulsion units. The weapon, stationed in Heilbronn, north of Stuttgart on the Neckar River, had not been armed with its nuclear warhead, but the fire was still the most serious incident associated with the ballistic missiles.[84]

Investigators from the Office of the Secretary of the Army concluded that the Army's own inadequate maintenance and support facilities had contributed to the accident. In what General Smith characterized as "a blinding flash of the obvious," the Army sought to redress the situation by upgrading the support facilities for the Pershing II. Lt. Col. Lloyd Colio, area engineer in Stuttgart, the region in which most of the work for the Pershing IIs took place, remembered that "within weeks money just came pouring in." For months thereafter EUD worked to design and construct shelters to protect and cover the missiles and the troops who maintained them.[85]

In December 1987 President Ronald Reagan and Premier Mikhail Gorbachev signed the Intermediate Nuclear Force Treaty. Both powers

agreed to eliminate all ground-launched missiles with ranges between 300 and 3,500 miles—the Cruise and Pershing II missiles and the Soviet SS–20 missiles. The mutual removal of the weapons realized the goal behind the original NATO decision to deploy the missiles. In mid-April 1991 USAREUR removed the last Pershing II launcher from Europe; five weeks later commanders inactivated the 56th Field Artillery Command, which had operated the Pershing missiles in West Germany. Like many at EUD, John Blake felt proud that the division's execution of the GLCM program for the Air Force and the upgrade of the Pershing II for the Army "convinced the Russians that they had better not try" a military confrontation in Europe.[86]

While the Army focused attention on new weapons systems and on upgrading operational and support facilities to improve morale and performance by the troops, it began to address the facilities in which the soldiers and their families lived. Just as the Europe Division became heavily involved in building to improve quality in operational and support facilities during the 1980s, it also extended its efforts to the facilities that supported everyday life for American military personnel and their dependents. Construction for quality of life became a major enterprise for the division in the 1980s and constitutes another important facet in the history of the Army engineers in Europe.

12

IMPROVING THE COMMUNITY ENVIRONMENT

For three decades after 1945, budget planners and politicians in Washington asserted that the U.S. military presence in Europe was temporary and that no long-term investment in permanent amenities for the soldiers and their families was either necessary or justified. During the American involvement in Vietnam, military budgets neglected the maintenance and repair of facilities in Europe. Between 1969 and 1977 increases in overall military spending failed to keep pace with the rate of inflation.[1]

With the change to an all-volunteer army in 1973, the quality of facilities became a significant component of military life. To a large extent, the Army's decision to improve the quality of life for U.S. forces in Europe grew out of self-interest. The characteristics of the soldiers serving in Europe changed quickly. The new recruits were better educated than conscript recruits and had higher expectations and ambitions. A far greater percentage of enlisted soldiers were married and had children. A growing percentage of soldiers were women, and in some families both husband and wife were in uniform. Single parents, especially, were concerned about care for their children during the working day.[2]

To attract and retain the best recruits, the Army had to offer better facilities than the run-down, barely adequate facilities that housed the conscript Army during the 1950s and 1960s. Despite programs such as Stem to Stern and Modernization of United States Facilities (MOUSF), living facilities desperately needed improvement. The Army began to understand that it could not retain the most qualified soldiers unless the soldiers and their families could see some hope of change. An Army publication asserted:

> If a soldier and family are forced to move into a cramped and dilapidated apartment in a shabby, ill-kempt military housing unit, and are then required to make do with inadequate heating and poor electrical and plumbing systems, the soldier is going to be miserable, and morale—and job motivation—will suffer.[3]

In both the short and the long terms, the Army also suffers. The soldier performs poorly, the Army appears unattractive as a career option, and the Army loses its investment in training during the soldier's initial tour.

In the late 1970s the U.S. military in Europe launched a series of programs designed to improve the quality of life for its service personnel, hoping that more comfortable living conditions would enhance morale and improve the commitment and productivity of its soldiers in their primary combat mission. Congress appropriated funds to improve and modernize both family housing and troop quarters. Other facilities serving soldiers and their dependents also received new monies. The Army and the Air Force expanded and improved medical and dental clinics, schools, day care centers for children, and recreation facilities. All these programs became a major part of the work of the Europe Division (EUD) in the 1980s.

Family Housing

By the late 1970s the United States Army, Europe (USAREUR), administered 53,000 family housing units in Europe, with properties in Britain, Belgium, the Netherlands, West Germany, Italy, and West Berlin. The Army leased 9,000 of these from local owners and maintained the other units as landlord for the soldiers who occupied them. Most of the housing units were in the Federal Republic and had been constructed with German funds in the early 1950s. Although sound at the time of construction, they had had thirty years of high occupancy and turnover—a new family moved in every twenty-one months on average—and had suffered from years of inadequate and underfunded maintenance. Over those years the expectations of soldiers had risen, and occupants expressed increasing frustration over the lack of amenities and the Spartan character of the 1950s construction. The electrical systems, for example, could not accommodate televisions, stereo systems, hair dryers, electric razors, and the host of small kitchen appliances that had become commonplace.

Ninety-five percent of the housing in USAREUR had been built as three-story structures with a center stairwell and two apartments on each floor. Such stairwell apartments were home to 155,000 residents. The design of the units created a high-density population; poor sound insulation and limited privacy compounded the problems inherent in integrating residents with diverse backgrounds and styles of life. Army Research Institute studies comparing the residents of duplexes with residents of stairwell apartments showed that the latter suffered from higher levels of stress; more medical problems that required treatment at a hospital or dispensary; and a higher incidence of alcohol and drug abuse, marital problems, child abuse, and general dissatisfaction.[4]

Pressure to continue using these housing facilities remained high. In 1981 USAREUR faced an immediate need for 5,000 additional housing units, and enlisted soldiers with families waited up to two years for

appropriate housing, by which time their tours might end. This undersupply did not even take into account those soldiers who lived with their families on the West German economy. The local housing market had a shortage of about 1.5 million units, which made affordable, conveniently located housing scarce and expensive for Americans. In the early 1980s a rent of $800 a month—more than twice the housing allowance most soldiers received for off-base living—was not uncommon, often for family quarters that Army inspectors judged to be substandard or even uninhabitable.[5]

Existing Housing Units

The Maintenance, Repair, and Improvement (MRI) program funded by the Department of the Army helped alleviate some of the housing problems. The program provided money to improve existing facilities; and USAREUR allocated a part of these funds to renovate existing family housing units, specifically targeting repair and replacement of bathrooms, kitchens, windows, and utilities.[6] Although the program was initiated in 1977, the architectural and engineering pilot studies were completed only in 1980. At that point, Headquarters, United States Army Corps of Engineers (USACE), approved an MRI engineering and architectural design guide for USAREUR that incorporated references and standards derived from the pilot studies. This allowed USAREUR to begin design work in 1981 on an MRI pilot project at the Adlingerstrasse housing area in Stuttgart.[7]

The MRI program enabled USAREUR to apply more resources to its existing backlog of maintenance and repair for family housing, but that backlog still stood at $246 million in 1981. USAREUR's overall backlog for all facilities other than housing amounted to $1.28 billion, or 54 percent of the Army's worldwide backlog.[8] The backlog for troop housing was even greater. An article that appeared in February 1984 noted "the troop-housing backlog in June 1982 was worth about $3.6 billion," an amount "21 times what the Army had been allowed to spend for troop housing in 1982." Faced with this

Housing suffered from a backlog of delayed repairs. This family housing unit in Giessen, Germany, shows signs of severe structural cracking.

backlog of repair work, in the absence of a clear indication of increasing support to reduce it, the commander in chief of USAREUR, General Frederick J. Kroesen, decided to press Congress more directly for funds.[9]

In 1982 General Kroesen followed up his first special report to Congress, which emphasized the need to fund facilities that supported the deployment and day-to-day operations of the combat troops, with a second report titled "Family Housing Facilities in United States Army, Europe." The report urged Congress to provide funds for the Army to improve those facilities that enhanced the quality of life for the troops.[10]

In the report and in personal appearances before Congress, General Kroesen argued forcefully that Congress should shift its attention to a new set of priorities. Over the years congressional leaders had responded to the argument for combat readiness that field commanders of front-line units had presented: Because the Soviets may come across the border at any time, I need money for training and weapons. General Kroesen transformed this argument to his advantage—and to catch the attention of the senators—by saying "If someone told me that the Russians were coming New Year's Day, I would still say our biggest problem is family housing." Kroesen's remark stuck in the memory of his contemporaries, who recalled his statement before Congress almost verbatim a decade later.[11] More important, it kept the pressure on Congress to provide additional funds.

In the 1982 report on family housing, Kroesen let the soldiers speak for themselves, quoting extensively from interviews with enlisted personnel and officers.[12] These residents of Army housing offered graphic and detailed testimony concerning the deplorable circumstances in which they lived.

Broken vapor seals made mold and mildew a constant problem. One officer's wife described her family's quarters:

> My son jokes about his pet slime, but it is terrible, really. My daughter hates sleeping near it and I don't blame her. You feel dirty even after you have worked hard all day to clean. I air all the rooms daily but now it is starting up there on the corner of the dining room ceiling over the dish hutch. The family eats with it.

Some situations were dangerous as well as uncomfortable. Inch-thick plaster that detached from ceilings because of moisture fell down in large pieces. Showing her bathroom in which plaster had already fallen, one sergeant's wife lamented, "I can't let my kids use [the bathtub] anymore. What if the ceiling falls on their heads?"

The only thing predictable about the heating systems was that they would fail sometime during the year. Despite efforts made by the Engineer Command under Stem to Stern and its boiler replacement efforts, the heating units for most USAREUR family housing had never been converted from the hand-fired coal boilers typical of the construction of the early 1950s. Residents put up with overheating on lower floors and inadequate heating on upper floors. Both the supply and the distribu-

tion of hot water were inadequate. Many water lines were nearly closed by the scale deposits because of corrosion and Germany's naturally hard water.

Shortages of personnel contributed to the backlog of maintenance and repair. The additional money in the early 1980s was not accompanied by an increase in personnel for the community-level engineering staffs. EUD alleviated the burden at the local level by acting as design agent for much of the new work. The assistant division engineer for the Directorate of Engineering and Housing, a position EUD commander General George K. Withers, Jr., established in January 1981, handled the division's efforts.[13] USAREUR also made adjustments to take account of the new volume of work: The Office of the Deputy Chief of Staff, Engineer, divided engineer staff functions with the Installation Support Activity, Europe.[14] In January 1983 the Department of the Army authorized USAREUR to establish a Senior Executive Service position in the Office of the Deputy Chief of Staff, Engineer, to manage the programs in facilities engineering and housing.[15]

In 1982 the Department of the Army responded to the need for more housing by approving an extension of the MRI program called the whole-house concept, which allowed the complete renovation of entire housing units. The Army provided over $19 million for fiscal year 1983 to be used for the military communities of Stuttgart (Adlingerstrasse, 72 units), Frankfurt (Gibbs, Betts, and Atterbury housing areas, 494 units), and Nuremberg (Pastoriusstrasse, 162 units). In February 1983 Headquarters, USACE, funded an upgrade of laundry rooms throughout USAREUR by shifting $9 million from the current year MRI program, thus delaying construction of three-quarters of the dwelling units in Frankfurt.[16]

As the workload for maintenance, repair, and renovation through new construction increased within USAREUR, the Europe Division aided the communities in two ways. First, because the communities lacked personnel with sufficient technical experience, EUD assisted in the very early stages to bring the concept design to the 35 percent level, making a project eligible for inclusion in USAREUR's budget request. Second, EUD acted as the design and construction agent once Congress approved the concept design in the Army's budget. Between 1983 and 1985 EUD completed designs and began some construction under the MRI program for housing in Stuttgart, Nuremberg, and Frankfurt. By 1985 the MRI program encompassed 1,250 family housing units at a cost of about $34 million.[17]

Initially, EUD processed MRI projects in its usual manner, beginning in the Engineering Division with work on design. As the volume of work increased and construction began, delays caused a bottleneck of design for fiscal years 1983, 1984, and 1985. Because facilities were old, design assumptions about the rehabilitation often did not match what contractors found behind the walls. Many of the earliest designs required extensive changes and redesign.[18]

In response to the growing program, the Engineering Division increased its Facilities Support Section from nine people to thirty-six in

Family housing was renovated in communities throughout Germany, including Nuremberg.

1982.[19] To deal specifically with MRI projects, EUD formed special teams, each consisting of a project manager from the Engineering Division, a construction manager from the Construction Division, a representative from the field office who knew the existing facilities and the local installation personnel, and engineers from the Technical Branch. Through the team approach the division hoped to apply lessons learned from each project and to maximize cooperation at every stage between the designers and builders.[20]

EUD's team approach proved highly successful. The division managed design and construction for renovations involving the installation of energy-efficient thermo-pane windows, additional insulation, new electrical wiring and plumbing, new kitchen cabinets and appliances, paint and plaster, and, in some cases, replacement of entire sections of interior and exterior walls and roofs. The greater efficiency of the units led to considerable savings in utility costs. By the end of fiscal year 1985, USAREUR had reduced the backlog of maintenance and repair from the high in 1981 of more than $1.25 billion to about $600 million.[21]

Factory-Built Housing

USAREUR also pressed Congress for money to build new off-post housing because only slightly more than 25 percent of the military families eligible for and requesting on-post housing in Europe could be accom-

modated.[22] During earlier years new housing for U.S. troops and their families had either been financed under the occupation or through the Alternate Construction program; in both cases, the West German government paid the costs.

In 1983, for the first time, Congress authorized funds for the construction of new family housing in Europe with the stipulation that the housing be manufactured in the United States for on-site construction in West Germany. The program for fiscal year 1984 called for 771 prefabricated housing units, with construction to begin in Wildflecken, Bayreuth, and Kitzingen. Quarters for two general officers were also authorized for Vicenza, Italy.[23]

On 21 September 1984, EUD awarded a contract for the first factory-built housing. The contract called for 153 two-bedroom units to be manufactured in modules in the United States by Corlite Building Systems of Weslaco, Texas, and delivered for final assembly and construction in Wildflecken. This was to be the start of work on 18,000 dwelling units constructed in twelve communities over the next four years. The contract for the housing in Wildflecken totaled $8.35 million, or $54,620 per unit. Philipp Holzmann, A. G., of Frankfurt won the contract to place the buildings on site; build roads, sewers, and playgrounds; and provide landscaping.[24]

The housing design incorporated new technology to manufacture relatively lightweight panels made of fiberglass-reinforced gypsum bonded to galvanized steel frames. Once assembled, the exterior of the panels

Modules manufactured in the United States were used to construct prefabricated housing in Wildflecken, Germany.

Prototype of Prefabricated Housing on Site in Wildflecken, Germany

received a stucco coating. Designers worked closely with German officials to ensure that the structures would fit well aesthetically with their surroundings. To demonstrate the quality and practicality of the product, Corlite constructed a prototype of the Wildflecken housing units at its plant in Texas that USAREUR officials and engineers from EUD inspected in October 1985. Corlite shipped the panels and complete bathroom and kitchen modules to Europe, where Holzmann constructed a second prototype on site in Wildflecken. Work on the prototype in Wildflecken began in November 1985; Holzmann constructed a tarpaulin-covered shelter to protect the structure from winter weather. Work then began on thirty-eight two-story buildings, each housing four two-bedroom apartments, and on one freestanding single-family dwelling.[25]

The Holzmann Company encountered numerous problems with the project. Because the module units were measured and manufactured to standard American scale, Karen Lippert, EUD's project manager on site, became an instructor to the German work crews, teaching them how to use tape measures calibrated in feet and inches. The modular design required many change orders. As the delays increased, the chief of construction, John Blake, finally insisted on a face-to-face meeting with Holzmann's chief executive officer to get the project on track. Once Holzmann's chief executive became personally involved, the project moved forward.[26] Straightening out the project cost the company dearly. Faced with financial and legal complications but eager to honor its commitments, Holzmann finally bought out the American provider, Corlite.

Although they completed the contract, Holzmann chose not to bid again on contracts for factory-built housing.[27]

Despite the problems, the first twenty-five buildings in Wildflecken, containing 100 apartments, were ready for occupancy in January 1987. Wiring and electrical outlets accommodated both 110- and 220-volt current, so that either German or American electrical appliances could be used. Each unit contained built-in closets, a dishwasher, a clothes washer and dryer, and a kitchen furnished with American equipment.[28]

As construction began in Wildflecken, EUD awarded contracts for six other communities scheduled for factory-built family housing; by late 1986 site work was under way in Kitzingen, Bayreuth, Dexheim, Vilseck, and Mainz in Germany and in Livorno, Italy, in preparation for assembly of more housing units. Waiting to occupy these new facilities were 3,890 families eligible for military housing and living in substandard private rental units.[29]

Construction began on 186 townhouses for noncommissioned officers in the Mainz military community in September 1986. A new company, the RADVA Corporation of Radford, Virginia, provided the modules to the German consortium of Zueblin/Aegis. Like Corlite, RADVA built a prototype for inspection at its plant before shipping the materials to Germany. The townhouse designs included three- and four-bedroom apartments as well as two-bedroom units. RADVA used expanded polystyrene bonded to galvanized steel frames in a patented process, creating a structure that was stronger than conventional wood-frame construction and provided excellent thermal insulation. The units had double-paned thermal windows for added energy efficiency, hardwood floors in the living and dining rooms, and built-in hardwood cabinets and closets with adjustable shelves. Each unit had a patio, a carport with a storage room, and a laundry utility room furnished with a washer, dryer, and laundry sink. The kitchen equipment and other features such as the wiring for both European and American appliances were comparable to the units in Wildflecken.[30]

At each of the subsequent communities that received factory-built housing, EUD applied lessons learned from the previous project. At Marshall Heights in Kitzingen, where 103 units went up in 1988, EUD insisted that the contractor replace the softwood handrails used for stairwells in the homes in Mainz with hardwood rails for better durability. Responding to suggestions by the occupants, the contractor installed two peepholes in each entrance door, one at a child's eye level.[31]

Projects in the new communities included the earthwork, roads, and landscaping. About 40 percent of the costs went into infrastructure built to local German construction standards—electrical service, street lights, plumbing and sewers, and district heating for the houses, all with underground conduits. The communities also received recreational and playground facilities. By the summer of 1988 EUD had awarded a total of $380 million in factory-built housing projects and had another $320 million still under design, of which $75 million (23 percent) was for the Air Force.[32]

Family housing projects in Soesterberg, Netherlands, included landscaping.

In constructing factory-built housing in Germany, EUD engineers became convinced that they could save time and money and reduce maintenance difficulties by using more German products and techniques. Some of the adaptations were easy, such as using German-style interlocking paving stones in carport driveways. But others required reinterpreting the congressional mandate to have the units manufactured in the United States. Scott Bearden, who took over as chief of the division's housing team in 1988, became an important catalyst for changing procedures to facilitate construction. He learned that in four out of five projects released for bid, German contractors had submitted proposals averaging 144 percent of the amounts authorized for construction. Bearden thought that if contractors had more latitude to use local products for interior finishes, cabinetry, and fixtures, they would bid more aggressively. He also contended that the program ought to present the companies with designs that were 90 to 95 percent complete rather than only 35 percent complete. By so doing EUD could avoid the cushion—as much as Deutschmark (DM) 1 million ($569,000 at the prevailing exchange rate)—that contractors had been adding to their bids to cover the remaining costs of design.[33]

Bearden's suggestions caught the attention of the deputy assistant secretary of defense for installations and logistics, Robert A. Stone, who gave Bearden a chance to present his ideas at the U.S. European Command Conference in February 1989. Stone approved Bearden's proposal to allow EUD more flexibility in accepting local fixtures, as long as the construction stayed within the intent of the law that all feasible effort be made to use

American products. Bearden also won approval to modify the procedures so that contracts would be awarded with 90 percent of the design complete.[34]

Bearden's efforts earned him honors as EUD Engineer of the Year for 1988, and the changes brought the desired response from the contractors—more competitive bids. By incorporating German fixtures, cabinets, doors, and windows and eliminating the cost of shipping furnishings from the United States, bidders could lower their contract estimates. The change also contributed to lower maintenance costs, because items for repair or replacement could be purchased locally.[35]

Attic Conversion

One innovative idea used in USAREUR to create new housing units involved converting attic areas in multiple-apartment housing facilities into small apartments. An idea advanced in 1984 by the director of engineering and housing in Göppingen, the plan called for renovating a standard stairwell apartment building and redesigning the space under the roof to create two-bedroom apartments. These small apartments, 772–933 square feet each, would be suitable for a family with one child under five years of age. The work involved raising sections of the roof to add headroom, but buildings retained their original footprint and much of the original profile. The conversions began in 1987, and by the end of that fiscal year EUD had awarded contracts for the creation of 260 attic apartments in seven different communities.[36]

Attics in existing apartment buildings, like this one in Aschaffenburg, Germany, were converted into two-bedroom apartments.

Each of the new apartments contained a clothes washer and dryer, a convenience unavailable to occupants of the lower apartments, who used a common basement laundry room. The attic apartments also had loggias, inset balconies, that offered a measure of private access to the outdoors. The loggias also represented an important safety feature: In the event of a fire, they provided level space accessible to rescue equipment mounted on fire trucks on the ground below. The additional amenities and the on-post location served as inducements to soldiers and their families to accept the small attic apartments. USAREUR calculated that by 1990 attic conversion could add over 1,700 apartment units to the military's housing inventory in Germany at a cost of about $60,000 a unit.[37]

Attic conversions were awarded as an additional contract to MRI renovations of entire buildings. Because the West German government allowed the U.S. military to contract for maintenance work directly rather than requiring indirect contracting, EUD intended to handle attic conversion the same way. The initial design for attic apartments anticipated completely removing the roof, constructing a full wall under it, and then replacing the roof. The German government objected that this really represented building a new top story on each of the buildings and thus constituted new construction, which required indirect contracting. To avoid having to award separate contracts for the renovation of buildings (direct) and the conversion of the attics (indirect), EUD redesigned the attic plans. The new design raised the walls less than three feet, expanded the existing dormers to provide more interior space, and kept the origi-

Although the roof line of this housing unit in Mannheim, Germany, was altered to add apartments in the attic space, the footprint of the building remained the same.

nal slope and general outline of the roof. With these modifications, the German government agreed to consider the attic apartments as conversions rather than as new construction. All the attic conversion projects were thus completed under direct contracting procedures except the work in Bremerhaven, where EUD placed the contracts indirectly as a stimulus to the depressed local economy.[38]

Despite all of this construction and special new programs such as the government rental housing program that allowed landlords to contract directly with the U.S. government, as late as 1989 USAREUR still reported a shortage of over 8,000 housing units out of a total need for nearly 100,000 units.[39]

Barracks

Although family housing represented a major concern for USAREUR in the 1980s, fully half the troops lived in barracks; the backlog on maintenance and repair of troop housing was substantial. Despite programs such as Stem to Stern and MOUSE, many of the barracks still suffered from deterioration due to lack of adequate maintenance over many years; they remained in embarrassingly bad condition even into the 1980s. Leaking roofs, faulty wiring, inadequate heating and plumbing, and overcrowding were the normal conditions in barracks. *Time* magazine reported in July 1981 that American service personnel in Europe "live and work in conditions that could cause riots in U.S. prisons."[40]

John Blake arrived at EUD as chief of construction about the time this article appeared, and he voiced to a colleague his irritation about the tendency of American journalists to exaggerate for dramatic effect. In reply, the colleague brought Blake a thick folder of photographs he had assembled. The pictures illustrated the claims in the article in *Time*. Blake recounted:

> The ground floor of this three-story barracks could not be used at all; four inches of water were standing in the total ground floor. Only half of the second floor could be used because only half of it had [running] water.... Only half of the third floor could be used because only half of it had electricity.... [Where] there were supposed to be nine urinals, there were only two or three; the rest of them had been broken off the wall.[41]

In barracks constructed in the 1950s, sixteen to twenty men slept in a single large room and used a common bathroom with one shower, one urinal, and one toilet for every twenty men. Committed to improving living conditions, USAREUR sought to provide the authorized minimum of ninety square feet per enlisted soldier in four-person rooms in existing facilities or in two-person rooms in new barracks. Each of the two- and four-person rooms designed for the 1980s had adjacent toilet and bath; two-person units shared these facilities with no more than one other

Construction of the barracks in Kaiserslautern, Germany, included two-person rooms for unaccompanied personnel.

room.[42] Through new construction and renovation the command set out to assure structurally sound, weather-tight buildings with comfortable and healthy heating and ventilation, as well as sufficient electrical wiring to allow safe operation of modern appliances. Design and construction also took into account the growing number of women soldiers in USAREUR, either with accommodations on floors separate from the men or in separate areas at the ends of floors. Even the name used to designate the facilities changed, from bachelor enlisted quarters to unaccompanied enlisted personnel housing (UEPH).[43]

With over $50 million available through USAREUR in 1984, EUD awarded twelve contracts for housing construction for unaccompanied personnel—two for modernization of existing barracks and ten for construction of new barracks. In the next two years contracts were awarded for similar housing at twenty-eight sites, including five projects in Greece and one in Turkey. The need was pressing: As late as December 1986, 100,000 USAREUR soldiers still lived in barracks classified as inadequate.[44]

In March 1986 a project valued at $1.38 million began in Karatas, Turkey, about forty-five miles south of Adana, to provide a 71-person three-story barracks with associated access roads, utilities, and other support services. The construction contract went to Kolin Insaat in early May. Five months later a contract modification added a new sewage disposal system and a separate, roofed trash and wash space. In October 1988

construction started at Hahn Air Force Base on five UEPH units, ranging from 96- to 288-person buildings. The German contracting group of Hochtief, A. G.; Wiemer und Trachte; and P. A. Budau worked on the barracks units for two years, completing the facilities in 1990.[45] EUD supervised 100 similar barracks renovation projects for the Army and the Air Force and had about thirty more in design by March 1989.[46]

Schools and Child Care Centers

The dependents of the military communities in West Germany needed schools and child care facilities as well as hospitals and clinics. The Europe Division managed design and construction for the Department of Defense dependent schools and for child care centers, presenting military communities with a succession of school buildings, additions, and renovations. In October 1976 the Southwest Area Office (Kaiserslautern) turned over to the 21st Support Command a new 80,000-square-foot middle school facility for Patrick Henry Village in Heidelberg. The new facilities contained a classroom building with cafeteria, two gymnasiums with showers and locker rooms, and multipurpose rooms.[47] Two new schools opened in Würzburg and one in Nuremberg in 1977; school projects continued in West Germany in Sembach, Ludwigsburg, Heilbronn, Schweinfurt, Neu Ulm, Kitzingen, Augsburg, Stuttgart, Hohenfels, Hahn, Bremerhaven, and Ramstein and in Italy in San Vito. By the summer of 1979 EUD had twenty-five school projects under construction or design

The Patch elementary and high school in Stuttgart, Germany, incorporated a variety of materials and almost no right angles.

and expected from $30 to $40 million a year for school construction beginning with fiscal year 1980.[48]

One of the projects completed in time for the opening of school in 1979 was the Alexander M. Patch Elementary and High School complex in Stuttgart. This facility accommodated about 1,500 students in more than seventy classrooms and had unusual design elements. Two buildings occupied a nine-acre wooded plot of land donated by the West German government and adjacent to U.S. European Command headquarters. The design used brick, galvanized steel, stone, and concrete with a great deal of glass; and the buildings were constructed with almost no right angles. A waterfall, a small zoo, a barbecue area, and vegetable gardens surrounded the physical plant. The landscape encouraged the designers to make one whole side of the gymnasium in glass, opening the room visually to the woods. The gardens gave students an opportunity to plant fruits and vegetables as a part of their educational experience. The zoo was designed in harmony with a greenhouse and included three rabbit houses for children to learn the responsibilities associated with caring for animals. The entire complex was designed and constructed in just over fifteen months by a consortium that included the German-U.S. Architect Group and four construction firms—Klee, Holzmann, Zueblin, and Wachter—all from the Stuttgart area. Construction cost about $6.5 million.[49]

To end overcrowding, EUD broke ground for a new middle school in the Pattonville Housing Area in Ludwigsburg, near Stuttgart, on 4 September 1979. The company handling construction of this $6 million school was M. F. Wachter, one of the builders of the Patch schools. Financial limits on the project mandated omitting the sports grounds from the initial phase of the construction, and the gymnasium was erected only as an improved structural shell.[50]

Similar construction in other communities continued throughout the 1980s. By 1982 the expectation of funding for the school improvement program in USAREUR had risen to between $40 and $60 million a year. EUD had twelve new school projects in West Germany programmed for fiscal year 1983 and seven more for fiscal year 1984, including additions to the elementary and high schools in Incirlik, Turkey.[51] In 1985 EUD had fifty-eight active projects involving schools.[52]

One project from 1985 illustrates the critical deficiencies that threatened USAREUR schools with possible loss of accreditation. The elementary school in Wiesbaden held its special education classes in storage rooms. A DM 1.8 million ($611,000) addition to the school, begun in September 1985 and completed the following August, provided new space for a library, a speech therapy room, an administrative office, and a supply storage room. All utilities were renovated in the same project, as were the playground and the intercommunications and bell system. The prime contractor, Fillibeck and Sons, also landscaped and repaved around the school.[53]

Improvements at the Frankfurt American High School on the former I. G. Farben property cost about $5.1 million and provided new laboratories

for classes in chemistry, physics, biology, and industrial arts. The project began in June 1986. Contractors completed renovations in the existing building in 1987 and a new 22-room facility in 1988.[54]

Construction for the schools program suffered in the mid-1980s because of the declining value of the dollar against European currencies. Many of the school construction projects authorized by Congress remained unfinanced; in 1986–1987 the program had more than $108 million worth of deferred projects and at prevailing rates of exchange needed almost $500 million to address the full needs of the schools.[55]

In fiscal year 1988 EUD awarded $62.6 million in contracts for eighteen schools projects—new buildings, additions, and renovations—in Germany, Belgium, the Netherlands, and Turkey.[56] The elementary school in Soesterberg, Netherlands, was one of these projects. Before the construction of the new $2.33 million elementary school, one building served all students, mostly dependents of personnel of the Air Force's 32d Tactical Fighter Squadron stationed at the Soesterberg Air Base. The elementary school provided 53,750 square feet of new space, and an alteration to the high school provided another 4,800 square feet. The project, handled indirectly through the Dutch government's construction office, engaged five different contractors: a general contractor and one each for mechanical, electrical, civil (paving and sewers), and landscape work. Although the Dutch construction office coordinated the work, EUD provided oversight of the multiple contractors. Construction began on the elementary school in 1987, and the school was transferred to the users in February 1989.[57]

In 1988 EUD confronted a new problem concerning work for the schools in Europe—the need to mount an aggressive asbestos abatement program. By December preliminary assessments had identified twenty situations that required asbestos abatement, many involving ongoing design contracts and indirect construction projects. Because OMA money funded the renovation and expansion projects, EUD had to review concept and final design, advertise projects, and award contracts for the asbestos abatement within the fiscal year. Initial estimates forecast that between 80 and 100 schools in the Netherlands, Belgium, West Germany, and Turkey might

Contractors wore special protective suits while removing asbestos from school buildings in Europe.

need the work; additional testing established that asbestos problems were more widespread. In Germany alone, construction materials containing asbestos were found in 145 of 166 schools and offices and in 415 of 671 buildings tested. The division's immediate concern was removal of asbestos-bearing materials that had become damaged and friable; the asbestos abatement program in school construction and renovation occupied the division's attention for several years.[58]

School construction did not slacken because of the problems with asbestos. Using preengineered, precast, reinforced concrete, EUD completed schools and school additions at a rapid pace through the end of the decade. Early in 1990 work began on a new kindergarten at the elementary school in Baumholder. Contractors completed the elementary/junior high school at Robinson Barracks in Stuttgart in the summer of 1990. In September 1990 EUD held a ribbon-cutting and turnover ceremony for a $5.4 million project at the junior high school at Kessler Field in Schweinfurt. The new $9 million middle school at Leighton Barracks in Würzburg, begun in October 1988, celebrated its completion with a ceremony in October 1990.[59]

The Army's concern about facilities for school-age children paralleled its growing concern for preschoolers. Child care always existed within the military communities, but it had been handled informally, with no direct Department of Defense responsibility. Officers' wives often organized programs of day care.[60] When Brig. Gen. Kenneth W. Kennedy commanded the Engineer Command between 1967 and 1971, for instance, his wife headed the board for the Frankfurt nursery for children of servicemen. Child care had been priced at 35 cents an hour, plus an additional 15 cents an hour for a second child, and she insisted on maintaining that price throughout her four years as board president. New board members coming from the United States and other military communities pointed out that the cost of babysitting had risen to 75 cents an hour, but Mrs. Kennedy argued that the Frankfurt nursery could provide the service at its 35-cent rate and still break even. She was concerned because many people using the service were working wives of enlisted men who were having a hard time making ends meet.[61]

In the absence of any formal program, babysitting services, preschools, and child care centers sprang up according to need, finding space in housing areas, chapels, and hospital wards. The engineers assisted, but often unofficially; a post engineer might build or paint something as an act of community goodwill. Col. Claude Roberts, who served with the Training and Doctrine Command in the mid-1970s, recalled having been "laughed out of the Pentagon" in 1976 when the command proposed building a nursery.[62]

By late in the decade the Army's attitude changed and EUD had design contracts for child care centers. Blink housing area in Bremerhaven was scheduled to receive a new child care center that would take the place of facilities located in a hospital ward. A child care center that EUD designed for Katterbach Caserne in Ansbach allowed the existing cen-

ter to move out of the chapel where it had operated. Such projects were financed in the early 1980s by nonappropriated funds.[63]

As the Army began to address the well-being of its troops in the barracks, in family quarters, and in the schools, child care facilities came under greater scrutiny. In the 1980s the Army began to see its role in the matter of child care as minimizing the conflict between the responsibilities of soldiers as parents and the requirements of their mission. Inspections of day care facilities revealed that many of them failed to meet even rudimentary safety regulations or fire codes. USAREUR took on more and more responsibility for the facilities, and EUD became increasingly involved in their design and construction.[64]

Safety in the child care facilities remained a major concern. When engineers learned that paint used in two of the centers under construction in 1984 contained unacceptable levels of lead, the division alerted the commander of the Installation Support Activity, Europe, and suggested random testing of paints used in residential facilities to ensure compliance with U.S. government specifications. The commander also initiated paint sampling programs for those facilities where EUD had acted as construction agent, with priority given to facilities used by small children.[65]

By the mid-1980s USAREUR began to reinterpret its responsibility: Child care meant not just providing babysitting services but furnishing nutritious food and a certain amount of instruction. The Army's changing attitude influenced its vocabulary: Child care and day care centers became child development centers.[66] By the end of the decade a Department of the

The changing role of child care led to the building of child development centers during the 1980s, like this one in Bad Kreuznach, Germany.

Army spokesman described "reliable, affordable child care" as a "readiness issue." USAREUR adopted the position that "the knowledge that one's child is receiving professional, concerned care in an adequate facility is perhaps the single most important factor in determining the individual's long-term job performance."[67]

When litigation in the United States focused attention on alleged sexual abuse in child care centers, the centers in Europe received additional scrutiny. The rapidly changing standards created problems for EUD, including cost increases and complications in administration and execution of the contracts. Each time the standards for child development centers changed in the United States, the centers in design or under construction through EUD had to be modified. This became a particularly vexing problem in the late 1980s as the number of projects increased and as tighter standards were applied.[68]

The child care center at Patrick Henry Village in Heidelberg was an example of the delays that could develop. Although completed in January 1988, the facility could not be turned over to the community until August because transparent observation panels had to be fitted to bathroom doors to allow the staff to monitor activity in toilet stalls. At the same time, contractors added an additional sink and a sprinkler system for fire protection.[69]

Some regulations proved redundant in Germany. For example, the requirement to raise wall plug sockets to fifty-four inches off the ground was designed to reduce the possibility that a child would receive a shock by jamming something into the socket. In Germany, however, all electrical outlets in classrooms had to be equipped with ground-fault interrupters. Similarly, U.S. guidelines stipulated that radiators, if present, should be covered. This provision prevented injury from steam radiators, but German construction used only hot water radiators that never achieved the same intensity of heat. If the regulations addressing wall outlets and radiators were too specific, others were too vague. One EUD engineer observed that the regulation that playground equipment "should be 'appropriate for the child's age' wasn't helpful if you didn't have a playground specialist at every office."[70]

Even late in the 1980s, USAREUR recognized that it was short of its goal of alleviating soldiers' concerns about their children and that "many of our child care facilities are widely held to be inadequate at best."[71] As a result, child development centers remained a focus of construction into the 1990s. A $1.6 million center for 145 children opened at East Camp, Grafenwöhr, in April 1990. A center at Wetzel Barracks in Baumholder celebrated a grand opening on 11 July. The facility at Old Argonner Caserne in Hanau opened on 14 September to serve 198 children. The Panzer Housing Area in Böblingen near Stuttgart opened its center for 145 children late in 1990.[72]

EUD also supervised construction in the late 1980s of a growing number of youth activity centers for school-age dependent children from six to nineteen years old. These centers provided space for dance, karate, and

Youth activity centers in Germany included this facility in Wiesbaden.

other recreational classes; TV and teen lounge areas; stages for theater productions; video game rooms; and gymnasiums for sporting events such as gymnastics, volleyball, basketball, and public gatherings. All facilities built in the late 1980s were fully equipped for access and use by physically disabled persons.[73]

Medical Facilities

Like the family housing and the barracks, many of the medical facilities that served the U.S. Army in Europe dated from before the war or from the period of rapid and austere construction in the early 1950s; by the 1970s they needed repair and modernization. The hospital in Nuremberg, for example, served the German military during World War II. The facility in Landstuhl was built as a 1,000-bed U.S. Army emergency field hospital in 1952. Beginning in the 1970s the Europe Division managed major renovations at both facilities.

The Nuremberg Army hospital provided medical support for sixty thousand service personnel and dependents in northern Bavaria. During the summer of 1975 EUD estimated the cost of renovation between $35 and $43 million. Design moved forward, and on 12 July 1978 contractors broke ground on the planned 250-bed facility. The construction provided an emergency clinic; a food service division; new facilities for radiology, physical therapy, and pathology; a sixteen-bed intensive/coronary care unit; a central materials section; an operating suite; and a nursery.[74]

In Nuremberg the engineers adapted a facility designed and constructed in the 1930s to new specialized medical equipment. Oxygen had to be readily available, as did steam for sterilization, and electrical capacity had to be adjusted to accommodate the new machines. When the U.S. medical community insisted on 110-volt, 60-cycle equipment, designers initially solved the problem of converting from the 220-volt net to the 110-volt equipment by using several small step-down transformers. As the hospital began to operate the new equipment, the users discovered that these transformers delivered consistently higher voltages at less than full load, exceeding the maximum that the medical equipment was designed to handle and damaging the equipment. EUD returned to the American company that had designed the electrical system, demanded a solution, and insisted on greater involvement by the parent company in the designs prepared by its German affiliate.[75]

Cost estimates for the renovations proved woefully inadequate. Because the hospital remained open to care for patients throughout construction, designers used very little destructive testing to determine the material composition of the walls and ceilings. When the construction workers in Nuremberg found plaster bound to the ceiling with a woven mesh of straw, a "minor ceiling repair" turned into a major job of replacing the entire ceiling with wire mesh and plaster.[76]

The Nuremberg hospital renovation project was fully under way by 1979 at a cost of over $31 million, making it the largest single construction project, measured in dollar value, undertaken to that date for the U.S. Army in Europe. By 1981, when Blake arrived at EUD, change orders and contract modifications had elevated the costs and delayed the work. He gave the project his personal attention and brought the work back within budget. Construction continued in Nuremberg throughout the 1980s.[77]

The U.S. military hospital in Landstuhl dated from the 1950s, but it too needed renovation. The hospital's basic construction was sturdy enough, even though it had been built with a life expectancy of only fifteen years, but the design was outmoded. Built as an emergency-care field hospital to handle up to one thousand casualties at a time, it evolved into a full-care hospital for soldiers and their dependents. Additional facilities were haphazardly patched together, much like Nuremberg, rather than added according to any systematic plan. Late in the 1970s EUD began a comprehensive renovation of Landstuhl, starting with the dining hall. The work, undertaken in 1979, increased food service to eighteen hundred meals a day and incorporated tables and seating for wheelchair-bound patients.[78]

In 1980 a German project engineer from the Kaiserslautern Area Office, Hartwig Braun, took over management of the renovation in Landstuhl. Braun had worked on the construction of the hospital in 1952 in his first position with the U.S. Army engineers. He recalled the American insistence that the construction be temporary, so he found a certain irony in assuming responsibility almost thirty years later for managing a six-phase expansion and addition to the hospital to prepare it to serve future generations of U.S. military personnel.[79]

The original Landstuhl hospital had a long central hallway from which six wings extended at right angles on each side of the axis. Converting several patient wings at the center of the structure created a central core that included operating amphitheaters, obstetrics/gynecological facilities, and radiation laboratories. Contractors increased the electrical capacity and added an emergency generator. This work in 1983 opened the way to more extensive interior renovation through 1987. During all of this construction the Landstuhl hospital continued to provide medical services; by the end of the decade it resumed full operation as a medical center.[80]

Braun's involvement with the Landstuhl hospital in the 1950s and again in the 1980s illustrates the important role that German employees played in the Europe Division's work. Braun and scores of others provided continuity and stability, an intimate knowledge of German standards and methods of construction, and an understanding of U.S. specifications developed in years of experience in the field. They were particularly effective at the construction sites.

In the 1980s USAREUR programmed renovations for the 97th General Hospital in Frankfurt, the Army hospital in Würzburg, and the hospital in Bremerhaven. In Augsburg a new $22 million addition was completed in early 1989.

The 97th General Hospital in Frankfurt was built in 1938–39 for the German Luftwaffe. Since taking control of the hospital in July 1945, the U.S. military had kept it in constant use. Supplementary facilities and wings were added in the 1950s. Patchwork repairs kept the hospital running during the 1960s and 1970s, but by 1982 the overall deficit of standard maintenance that plagued military facilities in Europe brought the hospital to a crisis.[81] Water, heat, and sewage lines, clogged with mineral deposits from the local water, delivered only 20 percent of their intended capacity. Valves within the system were not locatable, inoperable, or nonexistent where they were needed. The entire roof needed repair, and 15 percent of it had to be replaced completely.

The hospital had a staff of over one thousand people and a daily average of more than two hundred overnight patients and nearly eight hundred outpatients; the needs of the U.S. military community dictated that staff work and patient treatment continue uninterrupted throughout the renovations. In addition, the Germans insisted that construction at Frankfurt General preserve the building's architectural integrity and interior features such as wall murals and marble work. Exterior renovation had to preserve historical and architectural features, including the marble work and tiling on porches.[82]

EUD planned the construction in six phases over seven years, but work continued for more than a decade. The construction program added a new wing for the hospital's intensive care and coronary care units. All utilities were replaced, including electrical wiring and plumbing. Interior rooms were stripped to the frame and then refurbished. Contractors restored doors that had original marble frames and replaced other doors and windows; thermal-pane windows helped control interior tempera-

Construction began in March 1987 on the addition to the Army hospital in Würzburg, Germany.

tures. The development of new medical equipment and procedures during the project led to redesign of some aspects of the construction. By mid-1988 work on the Frankfurt hospital had grown to a $58 million project, using Military Construction, Army (MCA), and Operations and Maintenance, Army (OMA), funds.[83]

Similar work on the hospital in Würzburg was conceived in 1984 as a renovation/repair project to modify the existing building. When the Army learned, however, that the old building could not meet the certification standards for the U.S. Joint Commission for Accreditation of Hospitals, plans changed to construction of a new six-story building that would be linked with the old one by a passageway. The EUD team reviewing the design found twelve hundred objectionable items in the original design and rejected it. Karl Schaffner, an engineer in the Würzburg Area Office chairing the team, was a native German who emigrated to Chicago in the 1950s and returned to work at EUD as an American citizen. Schaffner described the original design as "a total mess." It lacked standard elements of military hospital construction and detailed specifications concerning sterile installations and the purging of oxygen, nitrogen, and other gasses from the tube and pipe system. Designers overlooked the need for training to operate and maintain specialized equipment. The second submission was not much better. After the second rejection, the Europe Division commander, Brig. Gen. James W. Ray, personally called the president of the design firm to emphasize the division's dissatisfac-

Front Lobby of the Hospital in Bremerhaven, Germany, in September 1988

tion. Ray's intervention brought the desired results. After 4,820 comments, the division accepted the third design package.[84]

With a satisfactory design in hand, EUD let the construction contract for $49.4 million, the largest direct contract that the division awarded to that date. Construction began in March 1987. The contractor, a joint venture of Philipp Holzmann, Dyckerhoff-Widmann, and Wayss-Freytag, won an award under the value-engineering program for suggesting an alternate treatment of the surgical gas columns that saved almost $30,000 in the construction. In addition to the recognition, the joint venture received a cash return of more than $16,000 for the innovation. The contractor transferred the addition to the hospital administration in late September 1990.[85]

Contractors completed a comprehensive six-phase renovation at Bremerhaven hospital in 1989 at a cost of $22 million. Designers incorporated original stained glass windows depicting vintage German airplanes, battleships, blimps, and trains into the remodeled facility.[86] Construction plans to rearrange partitions in large rooms changed when the walls turned out not to be wood but rather peat moss that had been cut in bricks, dried, and then plastered over.[87]

Renovation of USAREUR hospitals in the 1980s was spurred by challenges to the facilities' accreditation. By 1984 the U.S. Joint Commission on Accreditation of Hospitals had revoked or denied accreditation to seven hospitals. In the hospital construction program, the command sought to correct the most blatant structural and mechanical defects and to provide

up-to-date medical services—modern emergency treatment centers and operating rooms, semiprivate patients' rooms to replace the open-bay wards, and support services that incorporated the most current technologies.[88] Despite the construction program, USAREUR reported in 1988 that "there are many Army installations in Europe that sorely need updated medical facilities if they are to adequately serve their communities."[89]

Community Support Projects

The Europe Division also supervised design and construction for facilities to provide food, clothing, and recreational outlets for American military personnel and their families. Commissaries and specialized facilities such as bakeries provided food; post exchanges for the Army and base exchanges for the Air Force offered clothing, necessities, and amenities such as appliances, tools, toys, and day-to-day supplies. The wide range of the construction projects included movie theaters; libraries with audiovisual centers; bookstores; officers' and enlisted personnel clubs; gymnasiums; bowling alleys; courts for tennis, racquetball, and basketball; physical fitness centers; swimming pools; rod and gun clubs; outdoor obstacle courses; playing and sports fields; and roller-skating rinks. In addition, EUD supervised construction of chapels to support the spiritual life of the community.

The money for these facilities came from a variety of sources, primarily nonappropriated funds generated as the profits from activities run

Community support facilities for U.S. troops, such as the NCO club in Göppingen, Germany, under construction in 1985, remained a consistent part of the division's workload.

Table 12

Europe Division Design Accomplishments
Fiscal Years 1980 and 1984

Program	Precent of Total Budget	
	Fiscal Year 1980	Fiscal Year 1984
Military Construction, Army	61	41.7
Military Construction, Air Force	13	23.2
Modernization of U.S. Forces	2	0
Operation and Maintenance, Army, family housing, and other	3	*5.9
Nonappropriated funds	0	1.8

*Operation and Maintenance, Army, only.

by the Army and Air Force Exchange Service (AAFES), which paid a fee to the Armed Services, or from the profits of the *Stars and Stripes* bookstores. In certain circumstances community support facilities received funding from the MCA or the Military Construction, Air Force (MCAF, often referred to as MCP), budgets, and even occasionally from the OMA budget. The West German government also provided funds under the Alternate Construction program.[90]

The percentage of any annual budget that went to these community facilities remained small. In projections for fiscal year 1976, less than 0.5 percent of the dollar value of EUD design effort went into projects supported by nonappropriated funds. By contrast, EUD projected over 80 percent of the dollar value of its design effort to go for MCA, MCAF, and MOUSF. The Construction Division showed the same pattern in its projections for fiscal year 1976: 25.9 percent for MCA, 20.5 percent for MCAF, 42.6 percent for MOUSF, and only 2.7 percent for nonappropriated funds and OMA combined.[91]

The effort to supply communities with facilities that enhanced the quality of life for soldiers and their families increased dramatically in the mid-1980s, but even in fiscal year 1984—a high point for programs devoted to projects such as schools, commissaries, post exchanges, day care centers, clubs—neither in design nor construction did this part of EUD workload reach 9 percent.[92] The design work for fiscal years 1980 and 1984 indicate that even as the tempo of work for recreational or community support programs increased during the 1980s, the design work accomplished on these projects remained a small part of the division's overall budget, even if one assumes that some of the design work charged under MCA or MCAF went to such programs.[93] (*Table 12*) Between fiscal

years 1984 and 1987, work on projects involving nonappropriated funds increased from 1.8 percent to about 3.5 percent of the EUD workload.[94] Though still small in relation to EUD's overall commitment of funds, the money expended on upgrading facilities to serve soldiers and their families had enormous potential for improving morale.

Commissaries and Post Exchanges

In 1969 AAFES entered into an agreement with the Office of the Chief of Engineers (OCE) to have Corps districts provide supervision and inspection of AAFES construction. In August 1977 AAFES Europe and EUD signed a similar protocol. The first two projects under this arrangement were shopping centers in Ramstein and Vogelweh, scheduled for award in 1978. The two parties anticipated one or two shopping centers a year. Within the year, projects began for new or enlarged post and base exchanges in Mannheim, Karlsruhe, Spangdahlem, and Hahn.[95] Even before this agreement, EUD had been overseeing the construction of a modern post exchange at Perlacher Forest Caserne in Munich, financed by the West German government under the Alternate Construction program. Between 1976 and 1978 the Alternate Construction program funded $8 million of completed community service construction where EUD provided technical review of the design and the construction. The program included an addition and an automobile service station in Augsburg, a rod and gun club, and facilities in Wildflecken and Karlsruhe.[96]

In May 1976 EUD accepted the task of supervising a commissary project in Iran, completed in 1977–1978 at a cost of $5.6 million. This was part of a much larger project that included a theater, an administrative building, and an Army Post Office facility. Work continued until the political upheaval of the 1979 revolution in Iran.[97]

In Europe EUD continued to supervise work on commissaries and post exchanges. In 1979 AAFES requested designs for new facilities in Schweinfurt and preliminary planning for a $4 million exchange in Stuttgart and an $8 million consolidated bakery in Grünstadt. AAFES plans also called for two additional base exchanges near Kaiserslautern and commissaries in Erlangen, Hanau, and Kitzingen.[98] In 1985 Louis Berger International prepared designs for a new commissary and additions to the post exchange at Smith Barracks in Baumholder and for the modernization of the exchange facilities in Frankfurt and Babenhausen.[99]

In September 1985 EUD awarded a contract for the first completely new building to house a main post exchange store outside the United States. The contract went to Wilhelm Druecker for a facility in Heilbronn valued at over $3 million. The decision to build a new facility rather than renovate a building designed for other use represented a new policy in keeping with the Army's growing concern with the quality of life available to soldiers and their dependents.[100] The same policy led to the construction between November 1986 and February 1991 of ten commissaries and to the expansion and renovation of more than a score of others. In fis-

Construction of this exchange mall in Nuremberg, Germany, was completed in 1988.

cal years 1989 to 1991, EUD programmed twelve post exchanges that used technology such as the electronic scanner checkout system introduced at the commissary in Hanau in 1986. The new facilities generally replaced commissaries housed in much older buildings: The Hanau commissary had operated from a building constructed in 1938 as a training area for horses, and the commissary in Würzburg's Leighton Barracks had operated from an aircraft hangar built in 1936. New construction afforded more modern and energy-efficient refrigeration, heating, and cooling systems, leading to economies in operation and maintenance. The added facilities also increased the space for shopping; the new commissary in Garlstedt provided an air-conditioned sales area six times the size of the previous commissary, itself hardly a decade old. To accommodate increased traffic, parking areas were resurfaced and furnished with designated spaces for disabled drivers.[101]

Sports and Recreational Facilities

Recreational facilities offered another avenue to enhance the quality of life for soldiers of the modern volunteer Army. Living standards for U.S. soldiers had seriously declined because of the erosion in the early 1970s of the value of the dollar in comparison with the Deutschmark. As a result, soldiers found the cost of living mounting each year and outstripping their pay. Because they could not afford to leave the military community to seek recreation and entertainment, on-post facilities became increas-

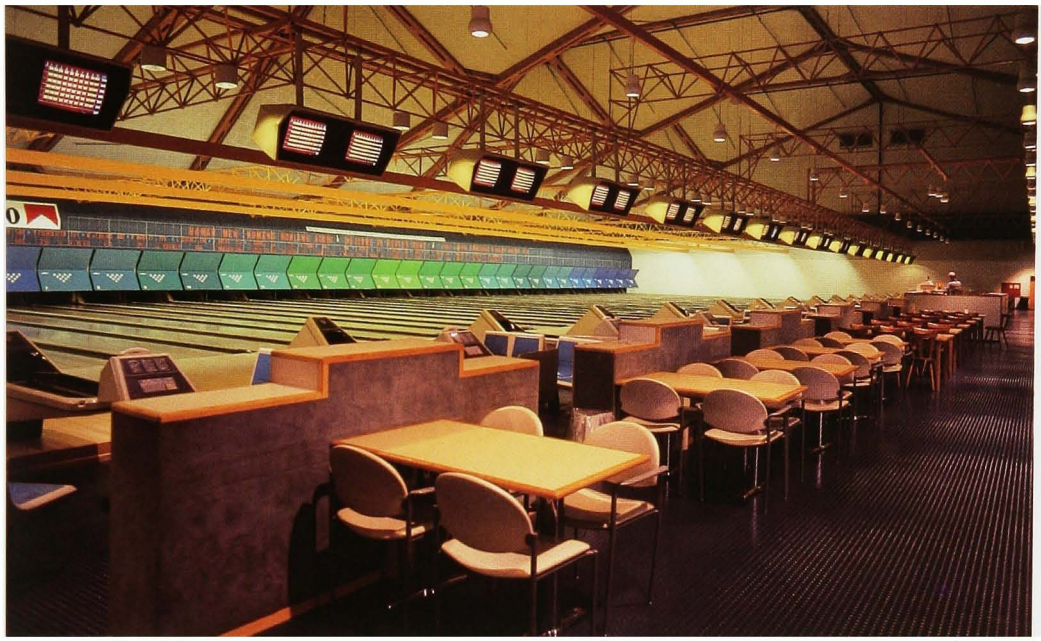
ingly important. When troops found gymnasiums, theaters, and clubs run down and overcrowded—where they existed at all—morale suffered.[102]

In fiscal year 1974 the Office of the Chief of Engineers in Washington launched a major effort to replace standard drawings used since the 1960s for outdoor sports facilities. The Corps issued sixteen new standard drawings containing layouts and construction details for twenty-one different sports fields and courts. As the drawings were distributed, EUD began preparing a technical manual on outdoor sports facilities.[103]

Gymnasium projects had long been a part of engineer activity in Europe; almost forty gymnasiums were erected in the 1950s.[104] In the 1960s and early 1970s the Engineer Command erected gymnasiums too, but these were under inflatable bubbles with an asphalt base covered with rubberized flooring. The construction had not always gone well. After a windstorm blew away the $10,000 inflatable cover being installed over the gymnasium at a Frankfurt school in 1972, ENGCOM's commander, Brig. Gen. Carroll LeTellier, learned that the troops installing the structure had failed to tighten the bolts on the anchor lines attached to the concrete. LeTellier lamented, "A 15-minute job left undone will now cost us about a week's construction time."[105]

EUD built gymnasiums throughout the 1970s and early 1980s, including one at the Sigonella Naval Air Base in Italy, but for the most part athletic facilities were patched and expanded haphazardly on a year-by-year basis.[106] Funding was uncertain. In December 1981 Congress deleted funds for gyms from the construction program, thereby disrupting the

Gymnasiums, like this one in Stuttgart, Germany, helped to improve morale of U.S. troops stationed overseas.



The Frankfurt Area Office managed the construction of this modern bowling facility in Hanau, Germany.

EUD schedule for awarding contracts in the subsequent months.[107] In 1982 gymnasiums figured in the plans for five sites in Turkey, and a separate contract was let in June 1983 for an addition and renovations to the gymnasium at the Ankara Air Station.[108]

In the mid-1980s USAREUR began to use money more systematically under programs aimed to enhance morale, welfare, and recreation. Bowling alleys gained renewed support. Between 1983 and 1988 the Frankfurt Area Office supervised construction of 100 bowling lanes at five locations. The bowling facility at Wolfgang Caserne in Hanau included automatic pin-setting equipment and automated scoring monitors manufactured by the AMF Company. It also featured a roof design that allowed an unsupported span of 165 feet under a dome 44 feet high, placing the facility "at the very forefront of the state of the engineering arts." Similar facilities went up in Bamberg, Baumholder, Dexheim, Kitzingen, Schweinfurt, and Vilseck between 1988 and 1990, incorporating equipment for automated pin-setting and electronic scoring.[109]

Racquetball courts became a major part of the sports and recreation program in the 1980s with the introduction of a project to build thirty-three courts throughout Europe, including Turkey. EUD wrestled with many frustrations managing the construction of these courts. USAREUR had ordered a large shipment of prefabricated racquetball court equipment from the United States and stored it at various places around Europe. Given the task of gathering the materials and erecting the courts,

EUD recovered mostly broken and weather-damaged pieces and discovered that much of the material was lost.[110]

Recreation centers became more prominent in the division's construction program as the military recognized the contribution of fitness activities to morale. In December 1985 EUD turned over to the 1st Infantry Division (Forward) at Göppingen a multipurpose recreation facility that included an outdoor recreation center, a bowling alley, a game room with video games, a sports shop, a rod and gun facility, locker rooms, and a snack bar and bar area. The outdoor recreation center rented skis and boots, bicycles, and tents and other camping gear. A few months later the U.S. Air Force took over a new physical training center in Incirlik, Turkey. At a cost of $1.1 million, the facility provided 13,749 square feet of space for basketball, exercise rooms and equipment, separate saunas and locker facilities for men and women, and administrative space.[111]

A similar multipurpose recreation center at the Carl Schurz Caserne in Bremerhaven reopened in late 1988 after extensive renovation of a pre–World War II aircraft hangar. The contractors replaced all electrical, heating, and plumbing systems; remodeled stage and seating space in the theater; repartitioned the interior space; replaced metal siding with masonry; changed all windows and doors to energy-efficient products; remodeled the bowling alleys and gymnasium facilities; and created entrance vestibules. When completed, the center also featured a snack bar, a food shop, arts and crafts shops, a travel agency, a billiards hall, and a music studio.[112]

Chapels

Just as the Army's far-reaching effort to improve the community life at military bases in Europe sought to provide modern shopping facilities and leisure-time activities, it also encompassed chapels for religious worship. Building and renovating chapels had been a part of the engineer responsibility in Europe since the 1940s. In the early 1950s the Army engineers built or renovated about 250 chapels for the military communities in Germany. These chapels were based on standard designs drawn up by Army engineers at European Command (later USAREUR) headquarters. In 1973–1974 OCE issued a new set of standard designs for chapels. Planned for a capacity of 200–300 persons, the design was simple, flexible, and appropriate for multidenominational use.[113]

In the 1970s EUD built chapels that served as centers for social services as well as religious observances. The chapel at Katterbach Caserne near Ansbach, for instance, housed the child care center until EUD built a new child care facility in the community.[114] In 1983 the Würzburg Area Office completed work on a chapel for Wildflecken; this chapel also had classrooms.[115]

EUD's services included interior design and planning for use of space in the chapel. In the early 1980s Sherry Sizemore served as an inte-

In the 1980s the division abandoned stock designs and built more custom chapels, like this one completed in 1987 in Cakmakli, Turkey.

rior designer on a new chapel at the Army base in Cakmakli, Turkey. Her responsibility was "to select all the material, from the stained glass windows to light fixtures and the designing of furnishings." The task required special creativity because the Turkish government insisted that all furnishings and decorative items be purchased in Turkey. In 1987 the Southern European Task Force's design office received a design award for this project; contractors completed the chapel the following year.[116] In that same year the division also finished a chapel for the Air Force community at Hahn Air Base. A larger facility than the chapel in Cakmakli, it used construction materials such as slate shingling on the roof, an oak ceiling, oak cabinetry, and marble floors.[117]

Chapels, recreational facilities, and shopping centers all figured as part of efforts intensified in the 1980s and extended into the 1990s to provide U.S. military personnel in Europe with a satisfying community environment. With increased funding in the first half of the decade, the military commanders had the resources to improve and expand facilities that supported the morale, recreational needs, and welfare of the soldiers and airmen to a degree beyond anything achieved in earlier years. Still, the expenditures for such amenities never amounted to more than 5 percent of the annual budget for military construction programs in Europe.

The momentum from funding for community improvements sustained EUD's construction activities into the late 1980s. Many of the divi-

sion personnel expected the intense pace of construction to continue into the next decade. Budget pressures in the United States, already evident in the mid-1980s, worked against that. A totally unanticipated geopolitical revolution at the end of the decade completely changed the division's future.

13

EUROPE TRANSFORMED 1988–1991

Between 1981 and 1988 the U.S. military spent more than $3 billion on construction in Europe and more than $100 million in master planning programs among the forty-two United States Army, Europe (USAREUR), communities. This effort, made necessary by new weapons systems and several decades of inadequate funding for maintenance, was spurred by a special report to Congress submitted by the commander in chief of USAREUR, General Frederick J. Kroesen, in 1981. The construction projects of the 1980s encompassed operational and training facilities; maintenance, storage, and supply facilities; barracks, dining halls, family housing units, and child care centers; hospitals and medical and dental clinics; sports fields and recreation facilities; and the heating, cooling, electrical, and sewer infrastructure.[1]

By 1988 USAREUR administered about 34,000 buildings located at more than 820 sites in countries from the Baltic Sea to the Mediterranean. The building and maintenance program of the 1980s brought about vast improvements in the living and working conditions of U.S. military personnel stationed in Europe. American leaders in Europe anticipated that similar work would continue well into the 1990s. The USAREUR commander's special report to Congress for 1988 noted in its conclusion:

> For every soldier who sleeps in comfortable barracks or every family that lives in decent housing, others continue to live in crowded, unsightly, and unacceptable buildings. For every soldier who maintains a weapon or vehicle in a safe, well-lit, properly-equipped workshop, many others must still attempt to perform the most intricate and exacting maintenance tasks outside, exposed to the elements, or inside dilapidated, unsafe, and totally inadequate converted horse stables. We must be allowed to continue what we have begun.[2]

The construction projects dedicated to improving the quality of life for soldiers in the 1980s brought to the Europe Division (EUD) of the U.S. Army Corps of Engineers (USACE) years of intense activity and organizational growth. Following the rapid turnover of division commanders in the mid-1980s, Brig. Gen. James W. "Bill" Ray's three-year tenure gave the division's employees a sense of stability and motivation to achieve excellence. As spring turned to summer in 1988, the staff learned that Ray would be promoted and reassigned to Headquarters, USAREUR, in Heidelberg as deputy chief of staff, engineer. The Europe Division was functioning smoothly, and morale was high. In Ray's final monthly column in the *Corps' Line,* he reminded the division to "expect a future full of change."[3] Neither he nor anyone else had any idea how much change the next three years would bring.

EUD's new commander had his own agenda for the division. His efforts to reorient the division became swept up in currents of change that brought a veritable revolution to the politics of Europe. That revolution challenged the Europe Division's existence and forced cancellation of much of its construction. The dramatic developments in East-West relations that provoked a restructuring of Europe overwhelmed efforts to bring modest changes to the Europe Division that General Ray's successor launched in 1988.

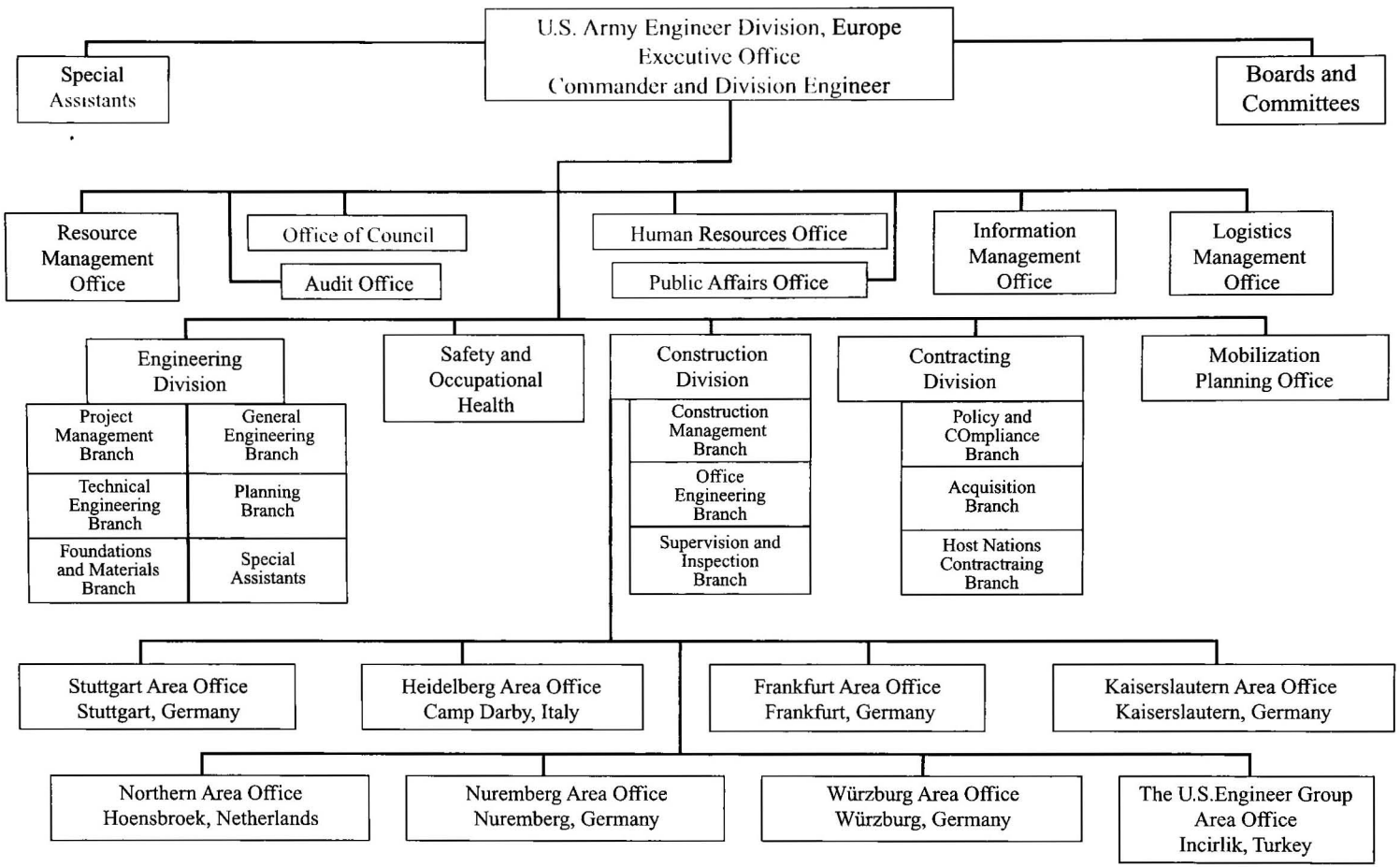
Prelude to Change

Brig. Gen. Ernest J. Harrell arrived as division engineer and commander of the Europe Division on 18 July 1988, having served most recently as commander of the Ohio River Division. He had previously commanded the 2d Engineer Group in Yong San, Korea; led engineer units in Okinawa, Thailand, and Vietnam from 1965 to 1968; and commanded the 43d Engineer Group at Fort Benning, Georgia. From 1961 to 1964 Harrell had been a platoon leader and company commander in an engineer battalion at Nelligen Barracks in West Germany. Born in Selma, Alabama, and a graduate of Tuskegee Institute, Harrell was one of the few African American general officers in the Corps of Engineers.[4]

At his first staff meeting, General Harrell praised EUD's reputation and assured division personnel that he would not be "making changes for change's sake."[5] He emphasized the division's connectedness to the military commands. He liked to visit EUD's customers in the military communities, welcomed opportunities to mix with the soldiers, and often went to training exercises in the field.[6] General Harrell also expressed his dissatisfaction that as EUD commander he commanded only the executive staff. He was concerned that not all the area engineers were military officers and that they reported to the chief of construction rather than to him directly.[7] (*Chart 14*)

Several of General Harrell's actions in the early months of his tour prompted the staff to suspect that he had come with a charge to get

Chart 14: Organization of the Europe Division, February 1989



General Harrell

the division more in tune with the rules and procedures of Headquarters, USACE. One of the division's deputies characterized the impetus as directed "to get things back in line, [so that EUD would] act more like a division under USACE instead of a lone wolf."[8] Staff members were disappointed that he did not embrace EQM (EUD Quality Management), the Total Quality Management program General Ray had initiated. In an early policy letter to the staff, Harrell reminded employees to use government quarters on division travel whenever possible, "to be sure that each of our many customers recognize EUD ... as a prudent and reliable steward of the nation's resources."[9] A subsequent policy letter mandated that the Logistics Management Office make no travel arrangements for commercial flights to the United States without first attempting to book travel through the less expensive Military Air Command.[10] In February 1989 General Harrell reported to the chief of engineers, Lt. Gen. Henry J. Hatch, Jr., that the division had established a formal command inspection program to assess the division's compliance with regulations, the effectiveness of established procedures and management practices, and the adequacy of internal controls.[11]

Emphasizing Affirmative Action

Affirmative action and equal employment opportunity (EEO) were of particular concern to General Harrell, and he repeatedly expressed his commitment to extending opportunities for minorities and women in the Army, in the Corps, and at EUD.[12] In 1988 the division had few women or African Americans in any grade higher than a GS–12 and no Germans or third-country nationals in supervisory positions.[13] In forums with women employees, through his commander's suggestion box, and in general conversation, Harrell raised the issue of affirmative action and questioned appointments and promotions. He met with groups such as Federally Employed Women, Women in Science and Engineering, and Supervisors Equal Opportunity Liaison, and he encouraged all personnel to talk with him about their concerns.[14]

Affirmative action efforts in the Europe Division dated to the establishment of the division, but the first full-time equal employment officer,

Joanne "Jodie" Close, did not arrive until mid-1984. Close had the full support of the Europe Division commander, Brig. Gen. Scott B. Smith, and attended senior staff meetings, participated in recruitment and personnel actions, and traveled to area offices.[15] When her employment contract came up for extension, the division advertised the position and selected Laverne Love, an African American woman with more than twenty years of experience in the federal government, including several years in the Ohio River Division. Love arrived in Frankfurt in early May 1989.[16]

General Harrell's concerns about improving employment opportunities extended to German and third-country national employees. Although these workers had held supervisory positions such as branch chief in the Engineer Command, regulations kept them out of such positions after the Corps established EUD in 1974, a situation which rankled many of them.[17] During his tour as division engineer, Brig. Gen. Drake Wilson had advocated dual recruitment, by which selected higher-grade and managerial positions would be open to all employees, regardless of nationality; in 1980 the division promoted three German engineers to C–10 positions (equivalent to GS–13).[18] Subsequent commanders emphasized recruiting American civilians as the workforce grew. Although the Works Council chairman, Hasso Damm, reported in 1987 that General Ray supported dual recruitment, a year later Damm stated flatly, "The program has died."[19] General Harrell, informed by Damm of ongoing frustration on the part of German employees, saw this as an issue of affirmative action. On 31 March 1989, he circulated a policy letter endorsing dual recruitment: "In those instances where high grade positions (GS–11 and C–7 and above) can be filled by a member of either workforce, I want selecting officials to conduct dual recruitment."[20] During the next year the division advertised almost ninety positions for dual recruitment.[21]

In the spring of 1989 General Harrell had another opportunity to underscore his commitment to affirmative action. A selection committee forwarded five names to him with a recommendation for the position as chief of the Information Management Office, a GM–15 slot. Skeptical that the committee had applied affirmative action guidelines, Harrell reviewed all the candidates, the selection criteria, and the selection procedure. He then selected Virginia Conway, another of the top three candidates. Conway had a strong technical background, extensive management experience, and experience working in Europe; she arrived in Frankfurt on 2 August 1989.[22]

When the new affirmative action officer, Laverne Love, took up her duties at EUD, she found numerous EEO complaints that had never received action. She set out to resolve the complaints, institute adherence to the law, and raise the visibility of her office. To reinforce Love's efforts, and in light of his experience with the selection of Conway, General Harrell issued a policy letter that addressed both equal employment opportunity and prevention of sexual harassment. In the 28 August 1989

letter, Harrell pledged that EUD would "establish and implement a division-wide Affirmative Employment Plan which will be integrated into every element of our staffing process."[23]

Currents of Change

In July 1988, at the time that General Harrell arrived, the Europe Division was a busy and vigorous organization. Construction placement in 1987 had been $527 million and was expected to top $557 million in fiscal year 1988. Scores of designs were on drawing boards; personnel numbered more than 1,150; and morale was high. At an open staff meeting in mid-October, the new commander predicted that construction and project design and contract awards would continue at similar levels:

> What can we expect from this next fiscal year that has just begun? ... Our bottom line expectations are to award between $650 and $700 million in contracts.... We anticipate placing about $530 million in construction this year. So for both construction and project design and contract award, the numbers should be similar to what we experienced this year. This solid foundation for our programs should extend over the next several years.[24]

Despite EUD's vigorous program, changes were occurring in the environment in which the division operated. In early 1987 General Ray had identified four factors that, he said, put EUD "on notice" as an organization. First, the Gramm-Rudman amendment to the 1986 federal budget mandated a reduction in the budget deficit. Second, reductions in the value of the dollar meant reduced buying power in Europe. Third, a directive from President Ronald Reagan ordered that all federal agencies become 20 percent more productive by 1992. Fourth, new Department of Defense regulations allowed installations to choose where they would obtain design and construction management services. General Ray responded to these pressures with a multiphase effort to make the division a more efficient, more productive, and more attractive organization by improving service to customers and increasing customer satisfaction.[25]

Ray's efforts did nothing to stem the tide of events in the United States and abroad that portended change so profound that EUD would not be able to adjust simply by making the organization operate more efficiently. In December 1987 President Reagan and Premier Mikhail Gorbachev signed the Intermediate-Range Nuclear Forces Treaty, the first genuine disarmament treaty of the nuclear era.[26] The treaty provided that the United States withdraw the Pershing II and Cruise missiles that EUD was installing. The budget Congress passed for fiscal year 1989 (beginning 1 October 1988) included only $78 billion for the Army, a total that forced the service to reduce the number of both military personnel and civilian employees.[27] In December 1988, in a speech before the United Nations, Gorbachev reinforced the impetus for change by announcing that the

Soviet Union would begin unilateral demobilization of 500,000 Red Army troops and 10,000 tanks.[28]

In February 1989, a few weeks after Gorbachev's announcement on demobilization, EUD's executive staff held a three-day conference to assess the division's future and the implications of these changes. General Harrell reviewed the changing geopolitical environment. He noted that the division had more than $100 million in projects not yet approved by the German government because of environmental concerns. At the same time, American and Soviet diplomats were pursuing negotiations on conventional forces that might produce a drastic reduction in the number of U.S. forces in Europe. Finally, Harrell gave his own assessment that, given the substantial improvements in facilities since his tour in the early 1960s, there were no large projects left to pursue.[29] In total, EUD's leaders had to look carefully at the division if the organization were to remain viable.

One prospective change in the division emanated from Corps headquarters: The chief of engineers, General Hatch, was committed to implementing lifecycle project management, a management approach the Army's civilian leadership favored.[30] The concept of using a single project manager to follow a project from "cradle-to-grave" had been discussed in EUD for several years. In a letter of 11 February 1983 to the chief of engineers, Lt. Gen. Joseph K. Bratton, the Europe Division commander, Brig. Gen. George K. Withers, Jr., had noted that the lack of coordination between the Engineering Division and the Construction Division resulted in delays and reduced efficiency. Withers acknowledged that an organizational change might be necessary, but he was not "at the moment ready to embrace the Project Management Division Concept."[31] A panel on construction quality convened by headquarters in 1983 reported that the problems of passing projects from the Engineering Division to the Construction Division at EUD were similar to those experienced elsewhere in the Corps, though perhaps a little bit more intense.[32] The organizational study conducted by the Engineer Studies Center in April 1985 pointed out the duplication of project managers, funds management, and technical engineering elements in the Engineering and Construction Divisions.[33]

In January 1987 EUD addressed the issue of project management directly when senior managers devised an organizational plan to carry the division to 1992. The plan acknowledged implicitly the persistent difficulty in the turnover of a project from design to construction, a cause of dissatisfaction among both employees and customers for years.[34] The plan called for a major reorganization of EUD, creating the position of chief of program management, and adopting cradle-to-grave project management.[35] A task force chaired by the deputy division engineer prepared a concept paper with a new organizational structure. General Ray, however, chose not to reorganize because he wanted EQM firmly established before undertaking a structural change that would disrupt the design and construction program.[36] In contrast, General Harrell appeared eager to reorganize to implement life-cycle project management.[37]

In the summer of 1989 General Harrell obtained a copy of the 1987 concept paper on the reorganization.[38] In October he assembled a staff task force and named his deputies, Cols. John Moravec and Daniel Waldo, Jr., as cochairs.[39] In November the task force proposed a Program and Project Management Directorate comprised of project managers from the existing Engineering and Construction Divisions, as well as an Engineering and Construction Directorate that would include the supervision and inspection function from the Construction Division and the Technical Engineering Branch from the Engineering Division. The reorganization would create a Contracting Directorate in which contract specialists would handle all contracting negotiations. Only preselection and selection of architect-engineers for direct design would remain in the Engineering Division. The plan redistributed some other functions and changed the name of divisions to directorates and of branches to divisions.

General Harrell requested approval for the reorganization from Headquarters, USACE. He asked Joe G. Higgs to head the Program and Project Management Directorate and John Blake to head the Engineering and Construction Directorate.[40] Work groups began developing a detailed table of distribution and allowances (TDA) to assign personnel spaces to the new structure. A Corps-wide directive from General Hatch, issued 21 December 1989, mandated maintaining separate Engineering and Construction Divisions; and EUD staff learned informally that the senior civilians in Washington opposed their plan.[41]

Political Revolution in Europe

While General Harrell and the EUD staff planned the reorganization of the division, revolution swept over the political landscape of Europe. Remarkable for its limited bloodshed, the turn of events was the most profound and far-reaching evolution on the continent since the end of World War II.

In December 1988 Premier Gorbachev pledged unilateral demobilization. On 25 April 1989, he announced that the Soviet Union would begin removing 1,000 Red Army tanks from Hungary.[42] On 2 May the Hungarian government began to dismantle the barbed-wire fencing and other barriers along its border with Austria. Removing these obstacles in effect opened the border between East and West for the first time since the Berlin Wall went up in 1961. East Germans, who had a right to citizenship in West Germany under the terms of the constitution of the Federal Republic, could suddenly move through Czechoslovakia and Hungary to Austria and into West Germany.

In July, in an appearance at the Council of Europe in Strasbourg, France, Gorbachev indicated that he was prepared to go even farther with arms reduction if the members of the North Atlantic Treaty Organization (NATO) would cooperate. He also signaled that the Soviet Union would not intervene to stop the political ferment in Hungary and Poland. The next day, at the annual meeting of the Warsaw Pact nations, Gorbachev

called for "independent solutions of national problems" within the Eastern Bloc.

As the summer of 1989 advanced, a trickle—and then a torrent—of East Germans began to emigrate to West Germany. On 19 August more than 900 East German "vacationers" in Hungary succeeded in fleeing into Austria during a picnic held near the Austro-Hungarian border. On 10 September the Hungarian government announced that it would no longer keep East German citizens from traveling through Hungary to Austria.[43] The East German government responded by rescinding travel rights to Hungary for its citizens. Within the next thirty-six hours 10,500 East Germans fled into Austria. Other East Germans sought asylum in West German missions in Eastern Bloc countries. On 30 September the 5,500 East Germans who sought asylum on the grounds of the West German embassy in Prague, Czechoslovakia, received permission from the East German regime to pass into the Federal Republic. By 2 October over 30,000 had fled to the West from Hungary.

During the first week in October, East German citizens demonstrated in East Berlin, Dresden, and Leipzig against their Communist-controlled government. The security police attacked the demonstrators and broke up the crowds, but the effect was only temporary. On 10 October a crowd of 50,000 East Germans took to the streets in Leipzig. On 11 October the East German Politburo met and announced its willingness to discuss reforms. The demonstrations continued: 100,000 protestors marched in Leipzig on 16 October, while another 30,000 marched in Dresden. On 18 October the East German Politburo announced the retirement of Erich Honecker and named Egon Krenz, chief of security police, as his successor. The demonstrations increased. On 23 October more than 200,000 people marched in Leipzig; three days later 100,000 protested in Dresden. Similar crowds appeared again in Leipzig on 30 October.

Between 2 and 9 November 1989, over 50,000 East Germans fled to the West. On 9 November, faced with massive defections it could not contain and street protests it dared not suppress, the East German government announced that it would grant immediate exit visas to all who requested them and opened all border points with West Germany, even the Berlin Wall. On that night, television images beamed around the world showed young Germans dancing and drinking on the top of the Berlin Wall that had symbolized since 1961 the partition of Germany and Europe between the Communist East and the democratic West.

The Iron Curtain had been irrevocably breached. Within weeks the Communist parties lost control in Hungary, Poland, Bulgaria, Czechoslovakia, East Germany, and Rumania. Through all these changes, the Soviet Union refrained from intervening to maintain control of Eastern Europe. The postwar order had shattered abruptly.

Had the Cold War also ended? For American policymakers and for U.S. forces in Europe this became the key question. Was the Soviet Army still a menace? Surely, Eastern Europe experienced a revolution that no one had anticipated, but its very unexpectedness opened endless pos-

sibilities for speculation about what the coming months and years might bring. The Warsaw Pact had virtually dissolved by the end of 1989, but the Soviet Army still maintained substantial forces in East Germany. If Soviet forces withdrew, what would be the fate of U.S. and other NATO forces? The answers to these monumental questions would condition every decision made within the U.S. Army, Europe, and U.S. Air Forces in Europe after November 1989. Meanwhile, because no one could answer any of these questions, EUD operations continued.

EUD and the European Revolution

At the end of September 1989, with political turmoil in Europe evident but the outcome unclear, EUD had authorizations for 1,031 positions and staff on board numbered 1,011. This represented a reduction of about 10 percent from the authorized level of 1,151 the year before. The budget for fiscal year 1990, which projected a slight reduction in military construction in Europe, would produce income for EUD sufficient to support 941 positions. This meant that the division needed to reexamine its field organization (*Map 30*) and reduce its workforce by 70 positions before 30 September 1990. The division expected to accomplish the reduction by attrition, that is, by not filling vacancies. In his "Commander's Comment" column in the October 1989 issue of the *Corps' Line*, General Harrell wrote: "Maybe we've seen the last $500 million-plus construction year, I don't know. However, if our program is indeed on the downside, I'm still expecting a 'soft landing' that projects a gradual rather than precipitous decline in our workload."[44]

Before the *Corps' Line* printed this column the Berlin Wall opened. During November and December 1989 the leadership of the Europe Division made plans to implement the reorganization to lifecycle project management (not yet approved by USACE), to initiate cost-savings measures, and to reduce the number of staff.[45]

In December Harrell spoke of a "transitional period at EUD" and the "challenges of the new year."[46] In the January 1990 *Corps' Line*, he wrote:

> There are momentous changes in the East that many of us would never have guessed were possible. The ramifications are uncertain and the immediate future is still a little hazy as the military experts and political leaders determine in what direction we are going. I would be off base if I said that those decisions won't affect us. Time will tell. It may be some years down the road or not at all.[47]

At a meeting of all staff on 11 January 1990, Harrell quoted Napoleon, who in 1802 during a brief respite in the wars that surrounded the French Revolution had announced, "Peace has been declared." Harrell affirmed that EUD's mission of managing construction in Europe remained unchanged. He also reminded staff that the division's funds came from fees charged for work performed and early projections indi-

Map 30

cated that the division did not have the resources to support 941 positions. Harrell acknowledged that a formal reduction in force (RIF) for American civilian employees might be required if indeed the declared peace held.[48]

Manpower Reduction

The division could not reduce the workforce of German and third-country employees in the same way that it could deal with American civilians. Tariff agreements between the Federal Republic and USAREUR governed all aspects of their employment, and the Termination Protection Law regulated any reduction in force.[49] The Works Council, elected under the authority of the tariff agreements, existed to ensure that EUD observed all applicable laws and regulations. The council and management cooperated for the benefit of employees, and management consulted with the council, particularly with the chairman, Hasso Damm.[50] Harrell respected Damm both personally and professionally and included him in many meetings on the proposed reorganization and possible reductions.[51]

Damm, who had worked for the U.S. Army in military construction since 1956, sensed that the organization was shrinking even before the Berlin Wall was breached. In August 1989 he projected that the German and third-country workforce would have to be reduced from the 1988 level of 325 to around 250. Following his intuition, he encouraged employees to take any opportunity that arose outside the Europe Division; by October 1989 the number of local national employees had fallen to 289.[52]

On 11 January 1990, as Harrell briefed EUD personnel, Secretary of Defense Richard B. Cheney announced a hiring freeze throughout the Department of Defense. This freeze complicated the division's efforts to reduce staff by attrition, because people who wanted to return to the United States could not be hired by any agency in the Department of Defense.

Because of the hiring freeze, General Harrell accelerated the tempo of management action within EUD. The division sharply curtailed training and temporary duty, eliminated overtime, froze purchases of dataprocessing equipment, and terminated nonessential temporary employees.[53] The Office of Human Resources began working with USAREUR's Civilian Personnel Office (CPO) to develop placement and furlough programs. Managers were asked to propose early retirement for employees, to encourage American employees to return to their jobs in stateside districts, to freeze hiring, and to encourage job sharing. They were also told to consult counsel's office, the EEO Office, and the Works Council before taking any action. To keep employees informed about fast-paced developments, the division instituted a one-page temporary employee newsletter scheduled for release twice a month; the first issue appeared on 26 January 1990.[54]

On 24 January 1990, Secretary Cheney announced a moratorium on new construction under the budget for Military Construction, Army, in light of pending changes in troop strength and possible closure of military bases. The freeze was to continue until 30 April. Initially, it was unclear what effect, if any, the three-month moratorium would have on EUD's plan to reorganize, on its budget, or on the projection of positions EUD could afford for the next fiscal year. In retrospect, Harrell described

the impact of the freeze on the division's workload as "like sticking a pin in a balloon."[55]

In early February, in an effort to help the division reduce manpower, Harrell requested permission from Headquarters, USACE, for three actions: (1) conduct a RIF of 100 American employees from federal service; (2) furlough American civilians for two days per month from March until the end of the fiscal year (or to implement a continuous furlough of not more than thirty days per person); and (3) offer early retirement to an estimated forty American employees. Harrell argued for these actions by saying, "It seems totally inconsistent that we tell this loyal and committed group of employees that their reward for successfully achieving U.S. and free world objectives is a RIF notice."[56]

A formal reduction in force affecting civil service employees is a complex personnel action governed by law and regulation. For any RIF involving more than fifty people, EUD needed approval from both USACE and the Department of the Army. According to the agreement signed in 1974 between USAREUR and the chief of engineers, the division had to work through USAREUR's CPO in Frankfurt to conduct a RIF.[57]

To encourage voluntary departures among the German and third-country national employees, Hasso Damm favored offering a buyout option. This involved a cash settlement that would support the worker from early retirement to the date when the German social security system would begin payments; the buyout was a common practice in the Germany economy. General Harrell accepted Damm's proposal that the Europe Division conduct a buyout using the authority of a relatively recent special USAREUR initiative that gave individual commanders discretion to decide issues up to Deutschmark 50,000 in labor cases (about $30,000).[58] In February 1990 Damm and others began advising the employees nearing retirement age of the buyout option. In line with prior settlements awarded by the German labor court in Frankfurt, EUD offered the German and third-country employees one-half month of salary per year of employment. The division chose not to put the offer in writing because of the legal implications of such an offer for future settlements. The commander reserved the right to deny any specific request to leave. About twenty-two people took this option before USAREUR stopped the program in June 1990, fearing a precedent should the entire European command face a RIF.[59]

To calculate the division's income, the Resource Management Office tried to project workload for the coming fiscal year. After the Department of Defense announced the moratorium on military construction on 24 January, the major commands and agencies such as the Army and Air Force Exchange Service and the Troop Support Agency began reviewing their construction projects, particularly in Europe. EUD customers canceled projects with increasing frequency.

As projections of workload and income decreased, the number of people that the division could support for the year beginning 1 October 1990 also declined. On 11 January Harrell reported 941 as the EUD target

number for employees. A month later, when the meeting was reported in the *Corps' Line*, the writer inserted a parenthetical addition: "(At last word, EUD officials estimated a year-end manpower strength of 865.)"[60] At the staff meeting on 1 March, Harrell emphasized that the decline in work for EUD was "not a temporary situation" and projected 857 staff positions for the division.[61] By 31 March the number of personnel in the division had dropped to 959, but the number that managers thought EUD could support in the coming fiscal year had fallen to 689. This meant a further reduction of 270 people in addition to the 52 employees who had recently left. Managers trying to cope with the changing numbers began to feel that "long-term planning is one week."[62]

While the Resource Management Office tried to project workload, income, and affordable staff strength for the coming fiscal year, the division's leaders argued over the allocation of positions in a new, smaller structure that incorporated lifecycle project management.[63] When division chiefs argued why they could not reduce instead of submitting plans for fewer positions, General Harrell reacted angrily. Thereafter, he personally decided how many positions would be assigned to each division rather than giving that task to the division chiefs.[64]

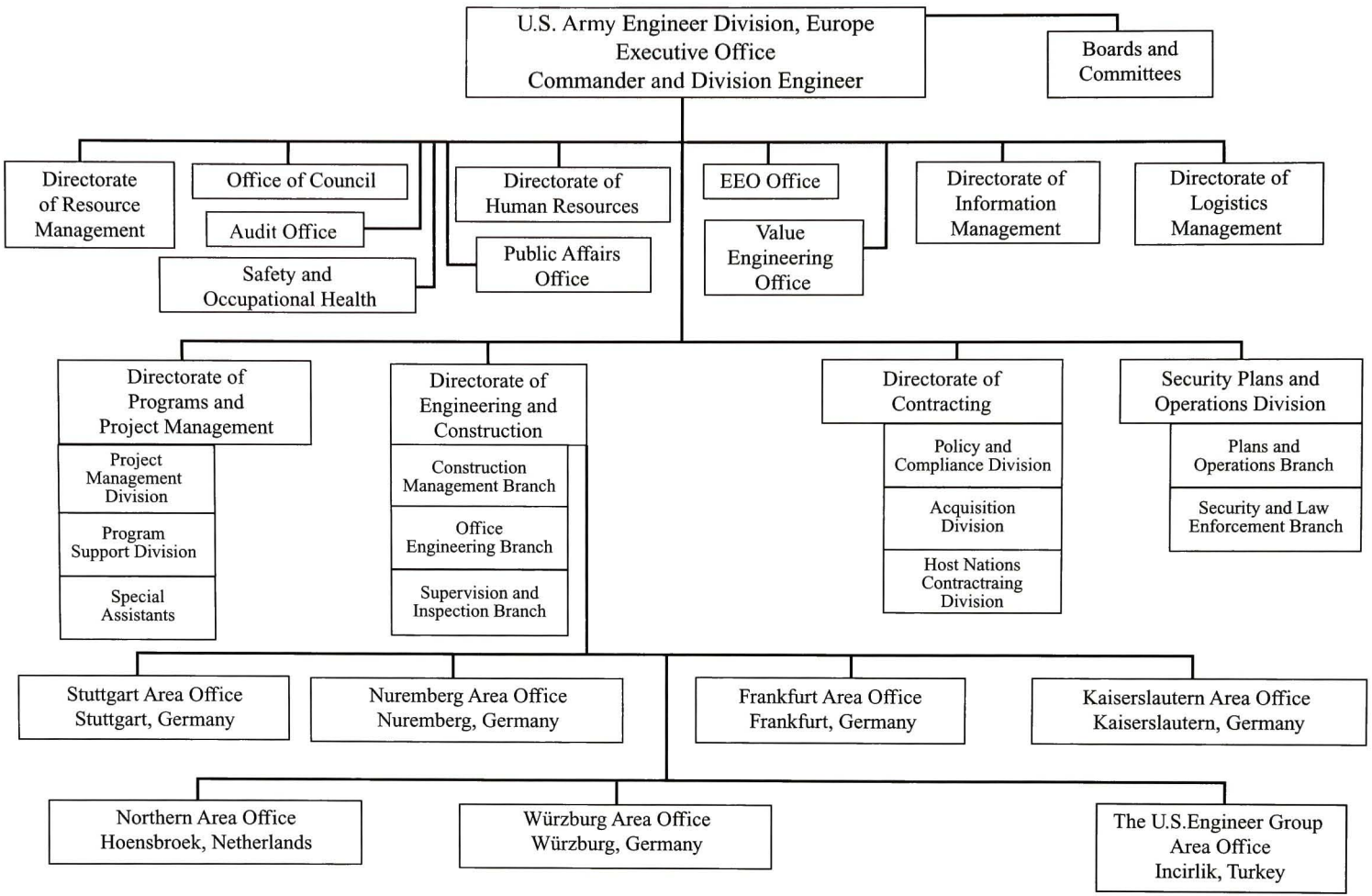
Reorganization Approved

In the last week of March 1990 the chief of engineers, General Hatch, traveled to Frankfurt with a team from Headquarters, USACE, for Focus '90, a headquarters briefing on the themes of environment and partnerships.[65] Just before the briefing, Hatch gave Harrell a memo approving the reorganization that EUD had requested three months earlier.[66] Harrell targeted April to implement the new organizational structure. (*Chart 15*) Some staff objected to the timing of the reorganization, but Harrell held firm. He argued that General Hatch had mandated implementation of lifecycle project management and that the new organization would be more efficient.[67]

The convergence of the reorganization and the need to reduce personnel complicated the division's situation. Using the latest available figures on affordable manpower, a new structure was built on an allocation of 689. In a memo to Hatch dated 5 April, General Harrell emphasized the need to RIF American civilians to reduce staff to 689 by 1 October.[68] To conduct a RIF, however, EUD needed an approved organizational structure.[69] Employees tried to determine where—or whether—their positions would be located in the new structure and how they would be affected in a RIF action; but without an official, approved allocation, that was impossible.

On 12 April 1990, the Department of Defense lifted the internal part of its worldwide hiring freeze, and eligible EUD employees could register for priority placement into open positions within the department.[70] At the end of April Secretary Cheney extended the moratorium on new construction in Europe to 15 June, causing EUD customers to cancel more projects

Chart 15: Organization of the Europe Division, May 1990



and further reducing anticipated income for the division. On 15 May, five weeks after he requested it, General Harrell received authorization to implement a RIF of U.S. civilian employees.[71] Approval had been slow in coming. The threat of widespread elimination of Corps positions in the United States had produced political pressures, and the Army commands had to seek permission from the Secretary of the Army for any RIF that involved more than fifty people.[72]

The announcement that EUD would conduct a formal reduction in force increased uncertainty and anxiety among the staff. U.S. laws and regulations governing a RIF had been developed in the 1940s. Although revised over the years to increase the protection for employees with good performance appraisals, no revisions had been made to take into consideration any aspect of EEO programs; only veterans received preferential treatment. Because RIF rules stated that the last hired would be released first, the impact was especially hard on minorities and women. No one had any experience implementing a RIF on as large a scale as EUD needed, nor had one been implemented outside the United States.[73]

To prepare for the RIF at the Europe Division, Michael Vajda from the Frankfurt Civilian Personnel Office worked closely with the chief of human resources, Irv Scherman, EEO Officer Laverne Love, General Harrell, and Colonel Waldo.[74] They set up briefings, seminars, and counseling sessions for staff to explain the procedures and to inform them of their rights.[75] Notices were mailed to 162 EUD employees on 10 July; 84 persons were told they would be separated as of 22 September and the rest were offered reassignment at the same or lower grades. The division abolished a total of 128 jobs.[76]

This RIF did not include the German and third-country employees. By attrition the number of these employees had dropped from 289 in October 1989 to 272 on 28 February 1990.[77] It was clear that deeper cuts would be required, and on 22 March General Harrell asked the commander in chief of USAREUR, General Crosbie E. Saint, for authority to reduce the number of German and third-country employees. On advice from Hasso Damm, Harrell also requested a formal determination from the commander in chief that the action was based on military necessity, that is, troop relocation or withdrawal.[78]

In early April Damm called USAREUR for clarification of the termination process.[79] German law provides that the employer can terminate for operational reasons but he must weigh the employee's "social factors," including position, grade, age, health, financial obligation (indebtedness), and distance to travel for a new position.[80] A termination of significant impact (that is, a large reduction in force) requires that the German Labor Office be notified. Damm pressed for concurrence by USAREUR that termination would be for military necessity. USAREUR agreed, and the German Federal Ministry of Finance concurred. Under these conditions the Tariff Agreement for Social Security could cover the terminations.[81] Signed by USAREUR in 1971, this agreement provided that, for employees over forty years of age who had been employed more than ten years,

the Federal Republic would pay the difference between the salary of the terminated position and any other employment for which the employee received less money.[82]

The EUD Works Council had to approve the proposed termination of each employee. If the Works Council disapproved, the division commander could refer the case to the USAREUR Works Council, which would review the case and decide whether to approve the termination.[83] The agreements and laws did not set forth procedures for implementing a major termination, and USAREUR did not move quickly to establish them.[84]

Seeking Relief

The moratorium on new construction in Europe that Secretary Cheney imposed in January 1990 and extended to 15 June was a temporary emergency measure to meet the changing strategic situation as the Soviet system in Eastern Europe collapsed. By summer it was clear that the Soviet Union was collapsing internally as well. On 21 June Cheney recommended that Congress take more permanent action and cancel sixty-eight military construction projects and withdraw more than $327 million in funds already appropriated to pay for them. Congress agreed to cancel sixty-five of the sixty-eight projects.[85]

Although the Europe Division had a $491 million construction program in fiscal year 1990, the cancellation of funding for proposed projects further clouded EUD's future; General Harrell sought budgetary relief.[86] The division had built a staff to support the military mission in Europe; it was not just an EUD problem that the mission had changed and projects were canceled. He wanted the Army and the Department of Defense to recognize it as "our problem." Specifically, he wanted the agencies that canceled projects to share the cost with EUD by making payments from funds already appropriated. This type of payment—in effect a penalty payment for breaking the contract—is accepted practice in the private sector when a project is canceled. Harrell's argument did not win support in Washington; only one of EUD's customers, the Community Family Support Center, agreed to fund a phase-out of construction contracts for projects they terminated.[87]

The division engineer also pressed Headquarters, USACE, to allow him to develop a budget using projected income from all sources and fixed costs to calculate the number of positions the division could afford. Customarily, Corps headquarters allocates personnel positions to each division from a computer model that calculates personnel needs based on projected design and construction placement. Harrell argued with John Wallace, chief of resource management in headquarters, that EUD did not fit the USACE model because the computer program did not include all the division's customers. He also objected to the practice of subtracting 15 percent from the model's allocation because EUD used indirect contracting. Harrell had argued before the financial crunch for a change in EUD

allocation of personnel positions; in the spring of 1990 he finally received approval for his budget.[88]

The division sought to cut costs in several ways. In August 1990 the division vacated leased office space in the Dornbusch area of Frankfurt. Without funds for a moving van, employees literally moved their own things in private vehicles.[89] The division also gave up the lease on the warehouse and offices in the Frankfurt suburb of Bonames. The Frankfurt Area Office planned to move into the Phillips Building (division headquarters) as space became available.

EUD's budget situation worsened as customers canceled projects. On 17 July 1990, one week after RIF notices were mailed, EUD had 848 employees on staff with a projection of 710 as of 30 September. Despite the self-imposed budget restraints and the RIF, it was apparent that the division would be $7.4 million short by the end of the fiscal year and that it could not support even 689 positions in the coming year. Discussions continued between division and headquarters staff about probable income and the number of affordable personnel for the coming year. The division recalculated the number of positions it could afford as 535.[90]

In late July a team from headquarters led by the deputy chief of engineers, Maj. Gen. Richard S. Kem, met with division leaders in Frankfurt. The Europe Division briefing for that visit included a review of recent events, decisions, and actions; detailed projections of income for the coming year; the division's plan to reduce staff to 535; and an explanation of why EUD was running a deficit.[91] General Kem and John Wallace agreed to provide supplemental funding of $7.342 million to cover the deficit in the current fiscal year.[92] EUD and headquarters agreed that headquarters would fund a "wedge": the cost of the difference between the number of people on staff at the beginning of fiscal year 1991 and the number thought to be affordable for the whole year, based on workload.[93]

Working from the agreements reached during these meetings, Harrell distributed a memo, dated 24 July 1990, to division leaders with a timetable of actions, dates for completion, and assigned responsibility.[94] To speed the reduction in personnel, on 6 August Harrell instituted a "no extension" policy for U.S. civilian employees; the next day he officially asked Corps headquarters for authority to conduct a second RIF.[95] Even without clarification of procedures from USAREUR, EUD also made plans to proceed with a termination of German and third-country employees, pending Works Council approval of an overall organization of 535.[96]

Despite the agreements Harrell thought he had reached during General Kem's July visit, communiqués from headquarters staff in the following weeks questioned, challenged, or contradicted EUD plans. Harrell was particularly disturbed to receive drastically revised projections of affordable EUD manpower for fiscal years 1991 and 1992: 330 and 200, respectively. His letter of 13 August to the chief of engineers, General Hatch, questioned the revised manpower projections, requested clarification on the number of positions at EUD that headquarters would fund, and noted that the staffing levels of 330 and

200 would not support either a general officer or two Senior Executive Service (SES) positions.[97]

In another effort to plan the future for the Europe Division, General Harrell suggested a merger between EUD and the Corps' Middle East/Africa Projects Office (MEAPO), a district-level element of the South Atlantic Division. From headquarters in Winchester, Virginia, MEAPO managed U.S. military construction throughout the Middle East and in Africa. Harrell thought that the missions of EUD and MEAPO were compatible and that consolidation would produce more efficient organizations. General Hatch approved a small task force with people from both organizations to consider this suggestion. Maj. Gen. John Sobke, commander of the South Atlantic Division, proposed an alternate plan: Consolidate EUD and MEAPO under his organization.[98]

The pressures on the Europe Division increased. General Hatch imposed a hiring freeze for all military-funded positions in the Corps of Engineers as of 20 August, making it more difficult for employees in Europe to return to Corps positions in the States.[99] At a staff meeting on 29 August, General Harrell announced that Headquarters, USACE, had ordered the division to reduce its staff strength to match its budget by 1 October 1991. In line with that requirement and the projection of $247 million in construction placement for fiscal year 1991, the division would have to develop a structure for 330–410 people.[100]

Harrell also reported on the possibility of the merger of EUD and MEAPO, but events in the Middle East had already intervened. On 2 August Iraq invaded Kuwait. Kuwait's neighbor, Saudi Arabia, the United States, and the NATO allies feared an invasion of Saudi Arabia. Backed by a United Nations Security Council resolution, on 7 August the United States and its allies launched Operation DESERT SHIELD. Worldwide military attention shifted from the political changes in Europe to the liberation of Kuwait and the protection of Saudi Arabia.[101]

Steps toward Stability

During September and into October discussions continued between headquarters and EUD over how to project the division's income for fiscal year 1991, how to calculate the affordable workforce, and how much in supplemental funding EUD would require. The Resource Management Office in Frankfurt sent to headquarters briefings and plans for matching the workforce to budget by 1 October 1991; headquarters sent back counterproposals.[102] On 10 August Maj. Gen. C. Ernest Edgar III replaced General Kem as deputy chief of engineers, altering the working relationship established at the July meeting in Frankfurt. A message from General Edgar on 5 October informed General Harrell that his plans to draw down the division represented "too slow a ramp." EUD should be prepared to issue a second round of RIF notices by 15 November. A faster reduction in staff would of course reduce the wedge funding that USACE would have to provide.[103] Harrell found the message "troubling," and his response to Edgar concluded:

> These are the procedures (rules) I thought we had agreed to. We can't manage both ways (manage to budget and end strength). If the rules have changed or there are understandings different than explained, please advise.... We will do as you direct. However, if allowed to manage as described above, we can accomplish the drawdown with less pain.[104]

The USACE outplacement program, Defense Department priority placement, voluntary departures, and the first RIF of U.S. civilians had some success. As of 30 September 1990, EUD manpower had dropped to 663; by 10 October the workforce numbered 625.[105] Using income projections acceptable to headquarters, Harrell proposed an organization of 218 as of 1 October 1991. At this point EUD would match workforce to budget for the first time since October 1989, just before the fall of the Berlin Wall.[106] Achieving the 218 level required a second RIF of U.S. civilians and a reduction in the number of German and third-country employees. Harrell proposed to go to a 50:50 ratio between the two categories of employees, a change from the ratio of 70:30 (Americans to Germans) that had prevailed only a year earlier.[107] Without any information to the contrary, Harrell planned for a stand-alone division.[108]

In late October General Harrell, Hasso Damm, and the EUD human resources director, Irv Scherman, went to Washington. Harrell presented plans for the organization of 218 with the 50:50 ratio of American and German employees, a more gradual timeline for the reductions in force, and agreement that headquarters would pay his division's excess labor costs for 1990 and provide the wedge funding needed for 1991. He received the approvals and support he sought.[109] The proposed organization did not include either a general officer or an SES position.

Scherman and Damm pressed USAREUR on the issue of cutting local national employees. USAREUR assigned responsibility to its CPO in Frankfurt, but this office had jurisdiction only over a very limited geographic area in Germany and not over employees in the area, resident, and project offices. Because each personnel office operated independently within a designated geographic area, it was not clear how the Frankfurt office alone could implement the RIF. In the face of this impasse, Scherman suggested that EUD try to bring together all the offices involved.

While Scherman and Damm were working with USAREUR to figure out how to terminate the local nationals, other managers within EUD were working to identify positions to cut. The experience of Virginia Conway as chief of the Information Management Office (IMO) typified the challenge that managers faced. When Conway arrived in August 1989, she found a staff of 59 and plans to increase to 70. Within weeks she was told to cut her budget and *eliminate* 11 positions. She handled that cut by not extending the employment contracts of Department of Army civilians up for renewal. In the plan for the first RIF in the spring of 1990, Conway had a target of 36 staff; the office had 37 on board, and Conway

made a case for keeping the additional person. Then 2 people left voluntarily. When she had to cut staff to 22 people, she drew a line through her own name on the organizational chart because the smaller office did not require a GM–15 manager. The organization plan for 218 people assigned only 11 positions to IMO, and 5 would be German employees.[110]

People throughout the organization who could see that their positions would be cut made plans. Anticipating his own departure, General Harrell designated his deputy, Colonel Waldo, as commander. Waldo had been intimately involved in planning for the reorganization, preparing briefings, and pulling elements of the staff together on personnel reduction. As deputy commander, he had an overview of the organization and "the trust of the people." Harrell worked closely with him on the transition.[111] Several division chiefs departed, and others started looking for new positions. In early November 1990 Joe Higgs, chief of engineering, received an offer to become chief of engineering and planning in the Ohio River Division; John Blake, chief of construction, became chief of construction in the South Atlantic Division.[112]

Outside EUD, decisions were made that affected the organization. Days before the freeze on construction projects was to expire on 15 November 1990, Secretary of Defense Cheney extended it; no contracts financed by military construction appropriations could be awarded before 16 April 1991.[113] On 3 December 1990, General Hatch announced that EUD and MEAPO would be assigned to the South Atlantic Division. Within weeks headquarters announced that the Europe Division would become the Europe District, reporting to a new operating division, the Transatlantic Division, with headquarters in Winchester, Virginia. The Kuwaiti Emergency Recovery Office and other Corps offices in the Middle East would also be under the Transatlantic Division, which would report to the South Atlantic Division.[114]

In mid-December a team made up of Ken Griggs of the South Atlantic Division, A. O. "Ollie" Werner of MEAPO, and Louis Brettschneider of EUD began meeting with division chiefs in Frankfurt to discuss the transition. Their tasks included defining the district's workload and preparing a revised structure without positions devoted to division-level management tasks.[115] The Europe District would be activated on 1 March 1991 with Colonel Waldo as district commander.[116]

It was not until 20–21 January 1991, one year after Cheney imposed the freeze of military construction in Europe, that Scherman, Damm, and staff from the EUD Human Resources Office and from USAREUR met in Garmisch, Germany, with officials from almost twenty civilian personnel offices to plan the reduction in force of non-American employees. Using information from EUD, the group identified specific employees whose positions would be abolished and calculated their dates of notification.

By German law the terminations had to take effect at the end of a fiscal quarter (31 March, 30 June, 30 September, or 31 December). Employees with less than 5 years' service had to be notified 6 weeks before the end of the quarter. After 5 years of employment, employees received notice

3 months before the end of the quarter; after 8 years, 4 months' notice; and after 10 years, 5 months. The maximum notification was 6 months. It was finally clear that the earliest termination notices, for the local nationals employed less than 5 years, would go out 15 February—that is, six weeks before the end of March. Most of the employees to be terminated had been employed more than 12 years; their terminations could not take effect until the end of September 1991.[117]

Changes in the Field

Planning was done in division headquarters in Frankfurt, but it was in the field offices that employees felt the cessation of projects and the falloff of the workload. From the time of the moratorium on military construction, area engineers frankly warned employees about the uncertain employment situation; many employees did not wait to receive formal notices. Construction managers in the Corps moved with the work; they expected to pick up and leave when a construction project was complete.

Geopolitical events had a particular impact on the Stuttgart Area Office, the primary point of support for USAREUR's VII Corps. In June 1990 Lt. Col. Lloyd Colio, the area engineer, projected that his staff would be reduced from its current level of over 40 to 18 or 20 by the beginning of the new fiscal year on 1 October. He also projected that Stuttgart would absorb the Würzburg Area Office when the area engineer there, Lt. Col. Leslie Rose, retired in November 1990.[118]

In July 1990 Lt. Col. Douglas Lamothe succeeded Colio in Stuttgart. A number of big projects had been scheduled for the Stuttgart area, but the moratorium shelved or canceled most of them. Iraq's invasion of Kuwait and the launch of Operation DESERT SHIELD in August changed the situation entirely. Most of VII Corps moved to the deserts of Saudi Arabia, and construction in the Stuttgart area came to a standstill. "Within six months we went from having a robust construction program, keeping almost 50 people in the area office going, to having no construction program at all, and we were down to 8 people by January 1, 1991."[119]

On 1 December 1990, the Northern Area Office closed and the division transferred personnel and property to the Hoensbroek Project Office. Two weeks later the Würzburg Area Office closed and personnel and property went to the Würzburg Resident Office.[120] Within weeks the Stuttgart Area Office also closed.

The construction moratorium affected the Frankfurt Area Office less severely, and Frankfurt took over responsibility for the Hoensbroek Project Office. In the spring of 1991 the twelve employees of the Frankfurt Area Office—down from thirty-five—moved into the Phillips Building.[121] The construction program of the Nuremberg Area Office declined, but not drastically, and Nuremberg took over responsibility for projects from both the Würzburg and the Stuttgart Area Offices. (*See Map 31.*) The U.S. Engineer Group office in Turkey remained open, although at a reduced staff level; the Greece Resident Office closed.

The Impact on Morale

A recitation of falling numbers in the workforce and the rapid succession of unprecedented events cannot convey the sense of confusion, uncertainty, and sadness that many of the staff at the Europe Division, particularly in Frankfurt, experienced during this period. The suddenness of the events contributed to the dismay of even experienced managers like Virginia Conway:

> Normally, when you are closing out something, whether it is a project or an office, it is a planned process with a date and you are able to plan all the steps to happen.... You are able to prepare people.... You have time to organize and close out those activities that you need to do and you have a sense of accomplishment.... When something like this happens, it is like everything gets thrown to the wind.[122]

Individuals reacted differently. Some decided quickly to leave the organization voluntarily. Others left only when all other options had been exhausted. EEO Officer Laverne Love counseled employees before and during the RIFs. She recalled:

> There were people who sat in here with the door closed and cried, who went through every kind of emotional state that you can believe. It was a bad time.... The RIF and the reorganization ... smashed into each other ... like an explosion. It was just unbelievable, so depressing for the employees. People hated to come to work. Everybody had a cold. Stress brings on all sorts of physical ailments.[123]

Long-time employees who were virtually untouchable in the reductions were not immune to the stress. Louis Brettschneider had been in Europe since 1956 and had experienced many organizational changes and fluctuations in workload, but he called the drawdown in 1990–1991 "a confusing period" and "most trying."[124] Hasso Damm, an employee of the U.S. Army since 1956, had seen many organizational changes and numerous colleagues come and go. When asked about the drawdown, he said: "This was really the sad part for all of those who are still here. One day you talk to somebody in the hallway and the next day he wasn't there anymore. He left. It was impossible to keep up with people who left."[125]

The transition created an emotional roller coaster for Debra Dale, a landscape architect. She received three RIF letters and bumped her best employee but kept a position at EUD, although her husband lost his. Months later she admitted that she was "still stumbling."[126] It was a peculiar irony that the end of the Cold War and the prospect of a more peaceful Europe brought so much dislocation and pain to the people working in the Europe Division.

U.S. ARMY ENGINEER DIVISION, EUROPE
FIELD ORGANIZATION
NORTHERN EUROPE
1991
Area Office Boundary (approximate)
Area Office Headquarters
Project Office
0 50 100 150 Miles
0 50 100 150 Kilometers
D E N M A
Hamburg
Bremerhaven
Bremen
UNITED KINGDOM
ENGLISH CHANNEL
AMSTERDAM
The Hague
Soesterberg
NETHERLANDS
Hannover
G E R M
Rhine R.
Kassel
BRUSSELS
Teveren
Hoensbroek
Meuse R.
BELGIUM
Giessen
Fulda
Wildflecken
Frankfurt
Bitburg
Hahn
Schweinfu
Aschaffenburg
Würzburg
LUXEMBOURG
Baumholder
Kaiserslautern
Heidelberg
Reims
PARIS
Marne R.
Metz
Karlsruhe
Seine R.
Stuttgart
F R A N C E
Augsburg
Loire R.
Dijon
SWITZERLAND

Map 31

BALTIC SEA
UNION OF SOVIET SOCIALIST REPUBLICS
Stettin
Oder R
Warthe R
BERLIN
WARSAW
POLAND
Elbe R
Oder R
Leipzig
Dresden
Breslau
PRAGUE
Grafenwöhr
Vilseck
CZECHOSLOVAKIA
Isar R
Danube R
VIENNA
BUDAPEST
AUSTRIA
HUNGARY

The Europe District

By the end of February 1991, fifteen months after the Berlin Wall was breached, the construction mission in Europe had been transformed. The Corps of Engineers continued to manage contract construction for the U.S. military but for a much smaller force. The organization that handled the engineering responsibilities, now the Europe District, was less than half the size of the Europe Division at its maximum. Through attrition and a formal reduction in force applied to American employees, the number of personnel had been reduced to 462; plans called for reducing the workforce to fewer than 300 by 1 October. A major reorganization had put life-cycle project management in place. Scores of projects had been canceled. The division realigned field operations and cut the number of area offices in half—from six to three. During these fifteen months the division's leaders struggled to manage rapid change and employees struggled to adjust to the personal impact of world events.

In a simple, thirty-minute ceremony on 1 March in a large room at the Abrams Complex in Frankfurt, Maj. Gen. Ernest J. Harrell cased the colors of the Europe Division and Maj. Gen. John F. Sobke, commander of the South Atlantic Division, accepted responsibility for the Europe District. Sobke then passed the command of the district to Col. Daniel Waldo, Jr.[127] In his final column in the February issue of *Corps' Line*, General Harrell wrote:

> EUD workers may have had to leave, but they never had to quit. EUD can be proud of the legacy of service and quality design and construction it leaves behind. It is a fine record.... When we case the colors of the Division for the last time, we can do so with our heads held high and with a spirit of celebration for the job well done.[128]

A year later Harrell reflected on the changes in Europe that he had experienced. In 1961, as a young officer in a construction battalion, he had lived and worked in sparse and difficult conditions; in 1988 he had toured new barracks, maintenance facilities, and recreation areas constructed by the Army engineers. A lieutenant in Germany when the Berlin Wall went up, he was a general officer in Germany when it came down in 1989. He emphasized: "We won the Cold War. We've accomplished our mission, and so we ought to celebrate that."[129]

The broad mission of the engineers, to support U.S. forces in Europe, had not changed; but as its Cold War adversary collapsed, the focus of American military strategy in Europe blurred. The Army Corps of Engineers had established the Europe Division in 1974 to respond to new challenges, new programs, and growing demands. Now, for the first time since the late 1940s, Army engineers faced the challenge of doing less rather than more.

EPILOGUE

When World War II ended in 1945, Europe lay in ruins; Germany was a conquered enemy; and the United States, Britain, France, and the Soviet Union were uneasy allies. Within a decade, Germany became an ally with the United States, Britain, and France. In the following decades Western Europe, in alliance with the United States, created and maintained a credible defense against Soviet expansion. By 1991 the Warsaw Pact of Eastern European countries dominated by the Soviet Union had collapsed, Germany was reunified, and the Cold War had ended, essentially eliminating the threat of a Soviet invasion into Western Europe. The rationale for stationing American forces in Europe largely disappeared.

From 1945 to 1990 the United States invested more than $5 billion in military construction in Europe, from Norway in the north to Turkey in the east, in support of U.S. forces. This figure does not reflect the changing value of the dollar, and it does not include the German contribution to the support of American forces.[1] It appears unlikely that the United States will ever again maintain as significant a military presence in Europe. This study of nearly half a century of military construction in Europe serves to record both the achievements of the past and some key lessons learned.

Appreciating Sovereignty

Time and again the United States confronted the reality that in peacetime the U.S. military operates overseas with allies who are sovereign. France, having been battered severely by war, jealously guarded her sovereignty. Despite having joined NATO in 1949, the French were unwilling to cede control over U.S. military construction on their soil in the 1950s. Germany, defeated in World War II and occupied in the 1940s, resumed its sovereign status when the new government was established. Not unexpectedly, the Germans asserted increasing control over military construction within their borders. In 1988 Allan Aaron, division counsel at the Europe Division in Frankfurt, articulated the American position in Europe:

> We are guests.... Sometimes we are guests of necessity. Sometimes we are honored guests. Sometimes the honored guest gets to be a little bit stale. And sometimes the necessity that brought the guest in the first place goes away. We have to be sensitive to these political nuances.... We are dealing with a sovereign. We don't have rights—we have privileges.[2]

One manifestation of sovereignty is indirect contracting. Personnel in the Department of Defense, in the Department of the Army, and at Headquarters, U.S. Army Corps of Engineers, were slow to grasp the impact of indirect contracting. Over five decades, international agreements rather than standard Corps of Engineers procedures increasingly came to govern contracting for U.S. military construction. From the 1950s to the 1980s Army engineers in Europe had to explain indirect contracting to first-time visitors from Washington. Even at the end of the 1980s, indirect contracting remained the aspect of command in the Europe Division for which the incoming commander felt least prepared.[3]

Indirect contracting increased the cost of design and construction, because monitoring required more time and more personnel. There were other cost factors over which Army engineers in Europe could exert no control, including the higher costs of benefits for local national and third-country employees and the need to employ negotiators and translators. Sometimes congressional mandates, such as the requirement to use expensive and inefficient American coal in German boilers, further increased construction costs overseas.

Recognizing Cultural Differences

Differences in culture and business practices between Americans and Europeans strained relationships, led to administrative errors, and created conflicts. Interpersonal and interagency misunderstandings resulted from strictures prohibiting U.S. government personnel from accepting gifts. In most European countries and in other parts of the world, it is an accepted practice for contractors to present holiday gifts to clients and business associates. Contractors were insulted when American colleagues returned their gifts. The *Richtfest* is a traditional party that Germans hold to celebrate completion of the skeleton of a building, but Americans were told that they could not partake in the food and drink that the contractor provided to honor the workers. In Turkey, construction workers balked when The United States Engineer Group assigned a woman as project engineer. Environmental laws in Germany had an impact on both design and construction, as well as on military training. The examples of clashing cultural values are numerous, and they point to the need for sensitivity, understanding, and respect for others' customs.

An Absence of Scandal

Considering the billions of dollars spent on construction, executed through thousands of contracts with hundreds of companies over the course of forty-five years, the documentary records contain few incidents of fraud or abuse, particularly after the mid-1950s when contract construction was centralized and the German political structure and economy stabilized. There were instances of misconduct—irregular procurements, overcharges and substitution of inferior materials by contractors, and fil-

ing of improper travel vouchers by employees—but the irregularities were minor when weighed against the number of projects and the total amount of money spent.

Continuity amid Change

The Army engineers in Europe supported the Army and the Air Force in the face of political changes in the United States and in Europe and through shifts in U.S. military strategy. They continued to work as the demand for engineering services fluctuated and as organizational structures changed. They adjusted to external events and pressures, from Soviet saber-rattling to new weapons systems, changing construction standards, and budgetary restraints emanating from the U.S. Congress.

Despite numerous changes from 1945 to 1991, there was continuity. Many of the places that were the focus of engineer activity in the late 1940s continued as focal points of engineer effort through five decades; names such as Grafenwöhr, Hohenfels, Heidelberg, and Rhine-Main Air Base, recur year after year in the records of engineer activities. American civilians such as Lou Brettschneider, William Camblor, and Herb Wooten and local workers including Hasso Damm provided continuity. Their careers mirrored and were shaped by the evolving mission of the U.S. forces in Europe.

The Legacy

The Army engineers who managed and executed U.S. military construction in Europe after World War II were asked to carry out their mission in difficult circumstances, where time was short, money was inadequate (except for a few years in the mid-1980s), and personnel were scarce. Military and civilian, Americans and local nationals, the Army engineers demonstrated commitment and an awareness that their efforts contributed to a larger cause. Individually and collectively, they saw themselves as a part of the Atlantic alliance's common defense; they knew that they were on the potential firing line in the Cold War.

What is the legacy of almost five decades of the American military presence in Europe, particularly in Germany—former enemy, then ally? The bricks and mortar of renovation and new construction is one legacy of Army engineer activity. Entire installations have been turned over to—or returned to—the governments of the countries in which they were located. French families in a housing development outside Orleans, France, appreciate the floors that are warmed by the conduit ducts for the district heating system. Refugees from Eastern Europe enjoy housing in Germany that was constructed for American military families.

Another legacy of the U.S. military presence is manifest in the lives of German nationals like Helga Preuss Butschan and Hartwig Braun. Helga was eighteen years old in the spring of 1945 when she fled East Prussia with her father, mother, brother, sister, and grandmother. When the fam-

ily arrived at Osterholz-Scharmbeck near Bremen, they were sent to a refugee camp. She recalled:

It was hard for us at first. Nothing to eat. My father didn't have a job; nobody had a job so we had to live from what the government gave us. In 1946 I started working for the Americans because we got a meal there.... I only ate part of it and the rest I brought home.... It was my intention [to work] only for a few months.[4]

In fact, she worked for the U.S. Army in Europe almost continuously until she retired in 1987.

Hartwig Braun was a student in a military boarding school for Aryan elite during World War II. Near the end of the war seventeen-year-old Braun was sent to the Russian front, where he became a prisoner of war. He escaped back to Germany but was held for three years as a prisoner of war in the French zone. As a prisoner he began training as a mason; after his release he completed an engineering degree and worked briefly for a German construction company. In February 1952 he accepted a job as project engineer with the U.S. Army at Ramstein Air Base. Interviewed at the Europe Division's Kaiserslautern Area Office in June 1990, he contemplated his approaching retirement after almost forty years with the U.S. Army in Europe:

When I go out I can say it was nice from the first moment to the last with *real* hard work in between.... Work I was not even asked to do I did because I was happy to do it. That is what I call a worked life, with foreign people like former war enemies, then growing together and later on friends to a point where I can say I worked better for the American people than I would have worked for my own house at home. Because they gave me so much by being friendly, by being open and telling their needs—and human relations were developed.[5]

Listening to Hartwig Braun, Helga Butschan, or scores of others describe their personal experiences as employees of the U.S. Army in Germany makes clear anecdotally the profound professional and emotional impact of the American military presence.

In October 1990 Brig. Gen. Ernest J. Harrell, the last commander of the Europe Division, presided over a tree-planting ceremony. The ceremony took place at the rear of the Phillips Building on the grounds of the I.G. Farben property in Frankfurt, Germany, from which Army engineers had operated since July 1945. The occasion was the dedication of an employee patio, but General Harrell asserted that the tree represented a great deal more than one construction project. The plaque at the base of the tree read:

This tree was planted to commemorate the dedicated work of the military and civilian personnel—American, German, and third-country nationals—of the U.S. Army Engineer Division, Europe (EUD). May

it grow and flourish in an era of peace their devoted efforts have helped make possible.[6]

A few years after this ceremony, the United States returned the former I.G. Farben property to the city of Frankfurt, which converted it into a university campus. In the early years of the twenty-first century the former Phillips Building sat empty, abandoned, and surrounded by weeds, an ironic tribute to the success of the Army engineers. The generation of Helga Butschan and Hartwig Braun is passing. The investment of time, money, and energy contributed by the Army engineers—military, civilian, and local national—remains as part of the legacy of the peaceful triumph of Western democracy that helped sustain more than a half-century of peace in Europe. This story is worth remembering.

NOTES

Part I Introduction

[1]Alfred M. Beck et al., *The Corps of Engineers: The War against Germany* (Washington, D.C.: U.S. Army Center of Military History, 1985), offers a comprehensive history of engineer activities during the war. Lewis A. Pick, "Expanded Role of Engineers," *Military Engineer* 41 (July/August 1949): 271; "Annual Historical Review, 1 July 1975–30 September 1976," Office of the Chief of Engineers, Gen Files, Box 8, File 4 (hereafter cited as Gen Files 8–4), Research Collections, Office of History, Headquarters, U.S. Army Corps of Engineers, Alexandria, Va. (hereafter cited as OH HQUSACE). Statistics from Beck, *The Corps of Engineers: The War against Germany*, p. 565.

[2]Eugene Reybold, "Engineers in World War II: A Tribute," p. 10, Unpubl Ms, 1945, OH HQUSACE. A copy of this typescript, dated 30 September 1945, is located in Engineering Society Library, New York, N.Y.

[3]Ltr, Cecil R. Moore to Karl C. Dod, 18 February 1974, commenting on an early draft of "Overseas Military Operations of the Corps of Engineers, 1945–1970," Unpubl Ms [1973?], Military Files, XI, Box 3, File 3 (hereafter cited as Mil Files XI–3–3), OH HQUSACE.

Chapter 1

[1]See Walter Laqueur, *Europe Since Hitler: The Rebirth of Europe* (New York: Penguin Books, 1982), pp. 15–20, for this and subsequent paragraphs describing Europe in 1945. See also Alfred Grosser, *Germany in Our Time, A Political History of the Postwar Years* (New York: Praeger Publishers, 1971), p. 35, and Earl F. Ziemke, *The U.S. Army in the Occupation of Germany, 1944–1946* (Washington, D.C.: U.S. Army Center of Military History, 1975), pp. 351–53.

[2]A. J. Ryder, *Twentieth-Century Germany: From Bismarck to Brandt* (New York: Columbia University Press, 1973), p. 466.

[3]*Final Report of the Chief Engineer, European Theater of Operations, 1942–1945*, 2 vols. (Paris: Herve et Fils, n.d.), I: 264–65.

[4]Karl C. Dod, "Overseas Military Operations of the Corps of Engineers, 1945–1970" (hereafter cited as Dod Ms), 1: 4, 6, Mil Files, XI–1–1, OH HQUSACE.

[5]Ibid., 1: 30–32, 264–68, 320.

[6]Oliver J. Frederiksen, *The American Military Occupation of Germany, 1945–1953* (Historical Division, Headquarters, U.S. Army, Europe, 1953), p. 12.

[7]Billy A. Arthur, "Tracing the Roots of the U.S. Army Europe," *Heidelberg Herald Post*, 19 Nov 82.

[8]"Reorganization of Tactical Forces, VE-Day to 1 Jan 1949" (Historical Division, European Command, 1950) (hereafter cited as "Reorganization of Tactical Forces"), p. 7, a 59–page typescript in Mil Files, XII–26–5/1, OH HQUSACE; *Campbell Barracks: The Story of a Caserne* (Heidelberg: Headquarters, U.S. Army Europe, Military History Office, 1987), p. 13.

[9]Cir "GCT/322.01 (Theater)," 26 May 45, and Cir "AG 322 GCT–AGO," 21 Jul 45, National Archives (NA), Record Group (RG) 332, European Theater of Operations, (ETO), Hist Div, Admin History Rpts 1942–January 1946, Box 73.

[10]Interv, John T. Greenwood with Brig. Gen. Paul D. Berrigan (USA, Ret.), 15, 17, 19 Nov 80, San Francisco, Calif., pp. 279, 285, 253, OH HQUSACE.

[11]"Report of Operations of the Theater Chief Engineer, 1 January–31 March 1946," p. 4, NA, RG 338, Historical Div, Program Files Engr Div, Quarterly Rpts Jan–Sep 46, Box 2761.

[12]*Final Report of the Chief Engineer,* I: 54. For a definition of "general construction," see p. 318; for other categories of construction, see p. 265. See also Dod Ms, 1: 3.

[13]Dod Ms, 1: 3, 9; Bernard W. Poirier, "The Forward Edge: An Overview of the Army Engineers in Europe, 1945 to 1980," p. 17, Iroquois Research Institute, 1980, OH HQUSACE.

[14]"Report on the Operations of the Chief Engineer, 1 January–31 March 1947," p. 5, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[15]"Reorganization of Tactical Forces," pp. 30–31; Frederiksen, *American Military Occupation,* pp. 29–31.

[16]*The Third Year of the Occupation,* Occupation Forces in Europe Series, vol. 5 (Frankfurt/Main: Office of the Chief Historian, European Command), 34: 2–7, typescript at U.S. Army Center of Military History (CMH), Washington, D.C.; Frederiksen, *American Military Occupation,* pp. 29–32, 41; "Report on the Operations of the Chief Engineer, 1 January–31 March 1947," pp. 1–5, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[17]On Austria, see Frederiksen, *American Military Occupation,* pp. 29–32.

[18]H. S. Miller, "American Engineers in Austria," *Military Engineer* 46 (May/June 1954): 177–79; Dod Ms, 1: 6, 38.

[19]"The USFA Engineers," *Stars and Stripes,* European Edition, 8 Jul 51, includes this retrospective information. See the files of clippings in the *Stars and Stripes* Library, Darmstadt, Germany; Miller, "American Engineers in Austria," pp. 177–79.

[20]*Final Report of the Chief Engineer,* II: app. 1–M; almost the identical organization as of July 1946 is given in the typescript report *The Second Year of the Occupation,* Occupation Forces in Europe Series, vol. 4 (Frankfurt/Main: Office of the Chief Historian, European Command), 31: 51. The Fiscal Division had been added by July 1946 and Real Estate had been subsumed under the Construction Division.

[21]*Second Year of the Occupation,* vol. 4, 31: 65.

[22]Ibid.

[23]"Report ... 1 January–31 March 1946," pp. 2–3, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts January–September 46, Box 2761.

[24]See the list of sixteen elements of the "Basic Administrative Plan" assigned as the responsibility of the theater chief engineer in "Report ... 1 July–30 September 1946," pp. 3–5, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[25]"Report, 1 October–31 December 1946," p. 12, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[26]Ibid.

[27]"Annual Report of the Chief Engineer, 1 January–31 December 1949," comp. Capt. James F. Holly and Diana M. Newcomb, p. 23, NA, RG 338, European Command (EUCOM), Engr Div, Annual Historical Report 1949, Box 2765 (hereafter cited as EED AHR 1949).

[28]*Final Report of the Chief Engineer,* I: 368–69; Harold W. Brown, "The Physical Plant: Procurement, Construction and Maintenance" (Frankfurt: Chief Historian, European Command, 1947), typescript, p. 30.

[29]Brown, "The Physical Plant," p. 30.

[30]*Final Report of the Chief Engineer,* I: 144; Interv, Greenwood with Berrigan, p. 285. See also Poirier, "The Forward Edge," p. 12, citing a Tele Interv with John R. Hardin, 14 Dec 79.

[31]*Final Report of the Chief Engineer,* I: 368.

[32]"Reorganization of Tactical Forces," p. 11.

[33]Unless otherwise noted, the figures and the information on the labor forces in this and the next two paragraphs are derived from the quarterly reports for 1946, NA, RG 338, Hist Div, Program Files Engr Div, Boxes 152, 152A, 2761, 2763.

[34]"Reorganization of Tactical Forces," p. 11.

[35]See also NA, RG 332, Hist Div, Program Files, United States Forces European Theater (USFET) Engr Sec, Quarterly Rpts, Box 340.

[36]Dod Ms, 1: 19. "Report ... 1 January–31 March 1946," pp. 15, 22–23, 38; "Report ... 1 July–30 September 1946," p. 23, 34; "Report ... 1 October–31 December 1946," p. 8; "Report ... 1 January–31 March 1947," p. 5; and "Report ... 1 April–30 June 1947," p. 4. All in NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts, Box 152 for the first three, Box 152A for the last.

[37]"Reorganization of Tactical Forces," p. 11; for the figures concerning civilians employed by the engineers, see the quarterly reports for 1947, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts, Boxes 152 and 152A.

[38]The numbers on troops, POWs, and civilians serving with the engineers are extrapolated from the quarterly reports for 1947, as in the note above. Because the numbers are scattered throughout the several reports, it is very difficult to tell if they are complete or comparable from quarter to quarter, thus they should be read as orders of magnitude rather than as exact statistics.

[39]Bruce H. Siemon and Roland E. Wagberg, *The Employment of Local Nationals by the U.S. Army in Europe, 1945–1966* (Heidelberg: Headquarters, U.S. Army Europe and Seventh Army, Military History Branch, 1968), pp. 46–47, 52–53.

[40]Dwight D. Eisenhower, *Crusade in Europe* (Garden City: Doubleday & Company, 1950), p. 430.

[41]"Reorganization of Tactical Forces," p. 7.

[42]Ziemke, *U S. Army in the Occupation of Germany, 1944–1946*, pp. 44–46. Under this point system, the magic number for demobilization was 85 for men and 44 for women. The figures for American military personnel in the European Theater and for the rate of redeployment come from "Hearing before Members of U.S. House of Representatives, 11 June 1945," NA, RG 332, Eng Sec, Opns and Project Rpts, 1945, 8–3, pp. 32–33, 39.

[43]See "Hearings before Members of U.S. House of Representatives, 11 June 1945," pp. 37–44, for the description of the redeployment camps.

[44]HQ Communications Zone (COMZ) Command and General Staff Conference [minutes], 21 May 45, NA, RG 332, Admin Rpts 1942–January 1946, Box 101, File 461–continued, pp. 6–7, for the information on railroad equipment and trucking needs. For target production figures, see "Activities of the Production Division, Office of the Chief Engineer," 3 Jul 45, for the week ending 30 June, p. 2, NA, RG 332, ETO, Engr Sec, Cirs, Bulletins, and Rpts, 1943–1945, Box 1, File 4. For a mention of the problems with other commands, see minutes for the meeting of 13 August 1945 in the same series.

[45]The problem of lumber and crating arose for discussion at COMZ staff meetings in May, June, and July 1945. See the appropriate minutes, NA, RG 332, ETO, Engr Sec, Cirs, Bulletins, and Rpts, 1943–1945, Box 1, File 4.

[46]For the relevant discussions, see Command and General Staff Conference minutes for 5 June, 1 July, and 15 December 1945, NA, RG 332, ETO, Engr Sec, Cirs, Bulletins, and Rpts, 1943–1945, Box 1, File 4.

[47]The three quotations, in order, are from "Weekly Report of Activities ... 21 May 1945," p. 1, NA, RG 332, ETO, Engr Sec, Cirs, Bulletins, and Rpts, 1943–1945, Box 1, File 4; Command and Staff Conference minutes dtd 19 Jun 45, p. 15, RG 332, Admin Rpts, 1942–January 1946, Box 101, File 461–continued; and Tele Interv with Moore, 14 Dec 79, cited in Poirier, "The Forward Edge," p. 8.

[48]*Final Report of the Chief Engineer*, I: 30–32.

[49]"Notes on Command and Staff Conference, 29 June 1945," pp. 8, 11, NA, RG 332, ETO, Hist Div, Admin Hist Rpts, 1942–January 1946, Box 101, File 461–continued.

[50]*Final Report of the Chief Engineer*, I: 364.

[51]Frederiksen, *American Military Occupation*, p. 119.

[52]*Final Report of the Chief Engineer*, I: 54.

[53]Ryder, *Twentieth-Century Germany*, p. 467. The current dollar value is derived using tables and a formula proposed by James C. Cooper and Karl Borden, "The Interpretation of Wages and Prices in Public Historical Displays," *Public Historian* 19 (Spring 1997): 9–29.

[54]Fleming's comments are in his response (undated) to Karl C. Dod's letter of 18 Oct 73, in which Dod asks for comments on his manuscript, in Mil Files, XI–3–3, OH HQUSACE.

[55]See the tabulation of military, civilian, and POW labor given in *Final Report of the Chief Engineer*, II: ann. 39.

[56]*Final Report of the Chief Engineer*, I: 350.

[57]Ibid.

[58]"Advance Section Engineer Report on German Coal Mine Operation," 21 Jun 45, NA, RG 332, ETO, Records of Hist Div, Admin Hist Rpts, "ETO Administrative File" 1942–Jan 1946, Box 2, File 8, "Advance Section, General"; quote from p. 3 of a seven-page summary.

[59]Ibid., quote from p. 2.

[60]Floyd D. Gibson, "Railway Electrification in Germany," *Military Engineer* 41 (July–August 1949): 288–89; see also *The First Year of the Occupation*, Occupation Forces in Europe Series, vol. 3 (Frankfurt/Main: Office of the Chief Historian, EUCOM), 14: 101–02, See also "German Railway Operations under the United States Army, 8 May–31 December 1945," Hist Div, HQ USFET, Frankfurt, Dec 45, p. 6, CMH.

[61]Interv, Greenwood with Berrigan, pp. 244, 254, 259, 260, 262, OH HQUSACE. Berrigan headed the Construction Division of the Office of the Chief Engineer for the European Theater.

[62]"Reports on Activities," 28 May 45, covering the week 21–27 May 45, NA, RG 332, ETO, Engr Sec, Cirs, Bulletins, and Rpts, 1943–1945, Box 1, File 4.

[63]"Notes on Command and Staff Conference, 29 June 1945," p. 8, and "Notes ... 27 July 1945," p. 8, NA, RG 332, ETO, Hist Div, Admin Hist Rpts, 1942–January 1946, Box 101, File 461–continued. See also Dod Ms, 1: 10.

[64]Interv, Greenwood with Berrigan, p. 255. See also Poirier, "The Forward Edge," pp. 12–13, quoting his Tele Interv with Berrigan, 14 Dec 79. "Report ... 1 April–30 June 1946," p. 40, NA, RG 332, Hist Div, Program Files, USFET Engr Sec, Quarterly Rpts, Box 340.

Chapter 2

[1]Frederiksen, *American Military Occupation*, p. 122.

[2]*The First Year of the Occupation*, vol. 3, 14: 99–100; Frederiksen, *American Military Occupation*, p. 120.

[3]"Report ... 1 January–31 March 1946," pp. 25–27, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts Jan–Sep 46, Box 2761. See also subsequent quarterly reports in Box 152; Frederiksen, *American Military Occupation*, p. 122; *Second Year of the Occupation*, vol. 4, 31: 64.

[4]Ziemke, *U.S. Army in the Occupation of Germany, 1944–1946*, p. 351.

[5]Harold W. Brown, *The Physical Plant: Procurement, Construction and Maintenance*, Occupation Forces in Europe Series (Frankfurt: Office of the Chief Historian, 1947), typescript, p. 47.

[6]Min, "Command and General Staff Conference," HQ [Paris] TSFET, 16 Nov 45, p. 9, NA, RG 332, Admin Rpts 1942–January 1946, Box 101, File 461–continued.

[7]Ltr, Fleming to Dod, October 1973, Mil Files, XI–3–3, OH HQUSACE.

[8]"Status of Theater Construction Program," presentation by Col. Robert J. Fleming, Engr, Notes of G–4 Semi-Weekly Staff Conference, 5 Nov 46, Mil Files, XII–1–15, OH HQUSACE (hereafter cited as Fleming Rpt, 5 Nov 46). Fleming was chief of construction in the Office of the Chief Engineer, USFET, at the time. See also "Report ... 1 October–31 December 1946," pp. 23, 27, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152; Frederiksen, *American Military Occupation*, pp. 122–23.

[9]Interv, Greenwood with Berrigan, p. 279.

[10]Fleming Rpt, 5 Nov 46, p. 1.

[11]Ibid.

[12]For this and the following paragraph, see Frederiksen, *American Military Occupation*, pp. 122–23; Fleming Rpt, 5 Nov 46, p. 1.

[13] *A Special Study of Operation "Vittles,"* published by *Aviation Operations Magazine* (New York: Conover Mast, 1949), pp. 56–57; Dod Ms, 1: 11, 23; *Second Year of the Occupation*, vol. 4, 31: 65.

[14]See the references in the preceding note and in addition, "Report ... 1 January–31 March 1946," pp. 23–24, Quarterly Rpts Jan–Sep 46, Box 2761; "Report ... 1 July–30 September 1946," p. 24, Quarterly Rpts 1946–1947, Box 152. Both in NA, RG 338, Hist Div, Program Files Engr Div.

[15]Dod Ms, 1: 15–16.

[16]*Special Study of Operation "Vittles,"* p. 58; Dod Ms, 1: 15–16.

[17]"Report ... 1 January–31 March 1947," p. 21, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[18]Dod Ms, 3: 3–4.

[19]Fleming Rpt, 5 Nov 46, p. 3. The quarterly reports from this period also testify to a chronic shortage of critical supplies.

[20]Fleming Rpt, 5 Nov 46, p. 2.

[21]"Report ... 1 April–30 June 1947," p. 1, 18, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[22] Fleming Rpt, 5 Nov 46, p. 2; "Report ... 1 January–31 March 1947," p. 20, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[23] Fleming Rpt, 5 Nov 46, p. 3.

[24]See the comments on procurement in the General Summary ("Irregular Procurement," p. 5) of "Report ... 1 October–31 December 1946," NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152. See also Fleming Rpt, 5 Nov 46.

[25]Ltr, Fleming to Dod, October 1973. The quotes used in describing his "settling of scores" come from this handwritten letter.

[26]Ibid.; again, the quoted passage is from Fleming's letter.

[27]"The Peace Dividend: Myth and Reality," *Time* (12 February 1990): 26.

[28]"Report ... 1 January–31 March 1948," p. 16, and "Report ... 1 July–30 September 1948," p. 13, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A; Frederiksen, *American Military Occupation*, pp. 50, 163.

[29]"Report ... 1 July–30 September 1946," p. 23, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[30]"Report ... 1 October–31 December 1947," p. 12, and similar report for 1 January–31 March 1948, p. 15, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A. The quote is from the latter.

[31]For a comment on this decision, see Berrigan's comments to Poirier cited in "The Forward Edge," p. 12.

[32]The phrase is from "Report ... 1 October–31 December 1947," p. 13, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A, but it reappears in almost identical form in every subsequent quarterly report.

[33]"Hearing before Members of U.S. House of Representatives, Jun. 11, 1945," p. 47, NA, RG 332, Engr Sec, Opns and Project Rpts 1945, Box 8, File 3 of 13; Interv, Greenwood with Berrigan, pp. 244, 259, 260, 262.

[34]See *Final Report of the Chief Engineer,* II: app. 20–A for a map of "Engineer Supply Installations in the European Theater, May 8, 1945"; the rest of the information in this paragraph is drawn from "Report ... 1 January–31 March 1946," p. 20, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts Jan–Sep 46, Box 2761.

[35]EED AHR 1949, p. 24, See also Ltr, Fleming to Dod, October 1973.

[36]"Report ... 1 July–30 September 1946," p. 36, in NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[37]See Ltr, Fleming to Dod, October 1973.

[38]"Report ... 1 July–30 September 1946," pp. 36–37; Ltr, Fleming to Dod, October 1973.

[39]"Report ... 1 October–31 December 1946," p. 24; and corresponding report for 1 January–31 March 1947, p. 16, both in NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[40]"Report ... 1 January–31 March 1947," pp. 16–21, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[41]Ibid., and corresponding report for 1 April–30 June 1947, p. 14, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[42]"Report ... 1 January–31 March 1947," pp. 16–21.

[43]Ibid., and corresponding report for 1 April–30 June 1947, p. 14.

[44]"Report ... 1 October–31 December 1946," p. 20, and "Report ... 1 April–30 June 1947," p. 14.

[45]"Report ... 1 January–31 March 1948," p. 11, and corresponding report for 1 July–30 September 1948, p. 10, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[46]"Report ... 1 April–30 June 1948," pp. 10–11, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[47]"Report ... 1 October–31 December 1948," p. 11, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[48]"Report ... 1 January–31 March 1949," p. 11, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[49]Ltr, Fleming to Dod, October 1973.

[50]For information on the rebuild program, see the quarterly reports starting with 1 April–30 June 1947 and continuing thereafter through 1949, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1947–1950, Box 152A, and EED AHR 1949.

[51]Interv, authors with H. Jace Greene, 1 Jun 90, Liège, Belgium, pp. 10–11. All interviews conducted by the authors and cited herein are deposited in OH HQUSACE.

[52]EED AHR 1949.

[53]The description is from Ltr, Fleming to Dod, October 1973; for confirming evidence, see also the discussion of the demoralization of the Army in "Reorganization of Tactical Forces, VE-Day to 1 Jan 1949" (Historical Division, EUCOM, 1950, hereafter cited as "Reorganization of Tactical Forces"), particularly pp. 4–5, 7–8, 20–21, Mil Files, XII–26–5/1, OH HQUSACE.

[54]"Reorganization of Tactical Forces," p. 14.

[55]On the reforms, see ibid., pp. 20–24; on Huebner's personal assertion of control, see Ltr, Fleming to Dod, October 1973.

[56]"Reorganization of Tactical Forces," p. 12.

[57]Frederiksen, *American Military Occupation,* p. 32.

[58]Ibid., pp. 32, 41; Billy A. Arthur, "Tracing the Roots of the U.S. Army Europe," *Heidelberg Herald Post,* 19 Nov 82, and *Campbell Barracks,* p. 3.

[59]*Campbell Barracks*, p. 13n.

[60]Frederiksen, *American Military Occupation*, p. 41.

[61]Ltr, Fleming to Dod, October 1973.

[62]"Report ... 1 October–31 December 1946," p. 7, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152, and *Second Year of the Occupation*, vol. 4, 31: 51.

[63]Fleming Rpt, 5 Nov 46, p. 4.

[64]"Report ... 1 January–31 March 1947," pp. 4, 19–20, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152.

[65]McCutchen is quoted in Dod Ms, 3: 11. The figures on projects reviewed and rejected come from the quarterly "Report ... 1 January–31 March 1947," p. 20, and corresponding reports for 1 April–30 June 1947, p. 18, and for 1 July–30 September 1947, p. 19, NA, RG 338, Hist Div, Program Files Engr Div, Quarterly Rpts 1946–1947, Box 152 (first quarter), and Rpts, Ltrs, Bulletins 1947–1950, Box 152A (second and third quarters).

[66]"Report ... 1 April–30 June 1948," NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[67]The description of the post engineer training teams is from "Report ... 1 July–30 September 1947," p. 3.

[68]*Second Year of the Occupation*, vol. 4, 31: 57; Frederiksen, *American Military Occupation*, p. 173; "Report ... 1 July–30 September 1947," p. 8; EED AHR 1949.

[69]"Reorganization of Tactical Forces," pp. 22–27; "Report ... 1 April–30 June 1948," p. 22, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A; Frederiksen, *American Military Occupation*, pp. 172–74.

[70]"Reorganization of Tactical Forces," pp. 27–31; "Report ... 1 April–30 June 1948," p. 15.

[71]Frederiksen, *American Military Occupation*, p. 181.

[72]*Campbell Barracks*, pp. 3–4; Arthur, "Tracing the Roots of the U.S. Army Europe," p. 6.

[73]"Report ... 1 April–30 June 1948," p. 15, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[74]Interv, authors with Stanley Sikirica, 29 Aug 90, Frankfurt, pp. 2–9.

[75]Ibid.

[76]Information in this section is from William C. Baldwin, "Engineers and the Berlin Airlift, 1948," OH HQUSACE, current files.

[77]The label for the Rhine-Main air base comes from *Berlin Airlift: A USAFE Summary*, a pamphlet prepared by Headquarters, U.S. Air Forces in Europe, xeroxed portions of which are in the Europe Division's Record Holding Area (EUD-RHA) in Frankfurt. The statistics on hours worked are in "Report ... 1 July–30 September 1948," p. 16, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A.

[78]Herbert J. Gall, "Flugplatz Tempelhof," *Military Engineer* 52 (July/August 1960): 289–90.

[79]Ibid.

[80]"Completion Report, OAF Field R–95, Tempelhof, Berlin, Germany," 10 Sep 45, p. 4, HQ, 852d Engineer Aviation Battalion, printed by Deutscher Verlag (Berlin/Tempelhof: Sep 1945), Mil Files, XII–1–18, OH HQUSACE; Interv, authors with Maj. Gen. Norman G. Delbridge, Jr. (USA, Ret.), 14 Feb 91, Washington, D.C., pp. 17–18.

[81]Ltr, General Lucius Clay to Lt. Gen. Curtis E. LeMay, 20 August 1948, Mil Files, XII–1–13, OH HQUSACE.

[82]Baldwin, "Engineers and the Berlin Airlift, 1948," p. 5, and Dod Ms, 3: 30, 31; "Report ... 1 October–31 December 1948," p. 18, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A. See also Interv, authors with Delbridge, pp. 14–18, for his description of runway construction.

[83]"Report ... 1 July–30 September 1948," p. 11, NA, RG 338, Hist Div, Program Files Engr Div, Rpts, Ltrs, Bulletins 1947–1950, Box 152A; Dod Ms, 3: 29, 35; Gall, "Flugplatz Tempelhof," p. 290.

[84]Interv, authors with Delbridge, pp. 5–6, 18–24, 74–77.

[85]"Report ... 1 July–30 September 1948," p. 11; Dod Ms, 3: 29, 35; Gall, "Flugplatz Tempelhof," p. 290.

[86]"Report ... 1 October–31 December 1948," p. 14.

[87]Gall, "Flugplatz Tempelhof," p. 290; the information on the lives sacrificed comes from André Fontaine, *History of the Cold War: From the October Revolution to the Korean War, 1917–1950* (New York: Vintage Books, 1968), p. 365.

[88]Memo, Lt. Gen. A. C. Wedemeyer to Chief of Staff Lt. Col. Bailey, 4 Aug 48, sub: Airlift Support of Vienna, Mil Files, XII–27–2, OH HQUSACE.

[89]Dod Ms, 16: 37.

[90]Miller, "American Engineers in Austria," pp. 177–79; Dod Ms, 3: 19.

[91]Dod Ms, 16: 37–42.

[92]On displaced persons in Austria, see Ltr, Hubert S. Miller to Karl C. Dod, 24 August 1976, citing a report dated June 1949 in Miller's possession, Mil Files, XII–27–3, OH HQUSACE. More generally, see William L. Starnes, Jr., "The Renovation of the Bindermichl Apartments," typed Rpt dtd Apr 50, Mil Files, XII–27–3, OH HQUSACE. The information on this project comes from Starnes' report unless otherwise indicated.

[93]Ltr, Miller to Dod, 24 August 1976.

[94]Dod Ms, 16: 40–42; H. S. Miller, "Special Engineer Report," 22 Jun 52, p. 2, Mil Files, XII–27–1, OH HQUSACE; Miller, "American Engineers in Austria," pp. 177–79.

[95]EED AHR 1949, p. 23.

[96]Ibid.

[97]Ibid., pp. 23–24.

[98]Frederiksen, *American Military Occupation*, p. 164; Interv, authors with Stuart Wagman, 11 Jan 94, Alexandria, Va., pp. 10–14.

[99]Frederiksen, *American Military Occupation*, p. 41.

[100]See ibid., p. 58.

[101]EED AHR 1949, pp. 32–34.

[102]Ibid., p. 61.

[103]Ibid., p. 56.

[104]Ibid., p. 56–57.

[105]Headquarters, European Command, "Annual Narrative Report, 1 January–31 December 1950" (Karlsruhe: Historical Division, EUCOM, [1951]), pp. 27–28 (hereafter cited as EUCOM Annual Report 1950.

Part II Introduction

[1]Truman R. Strobridge, *History of the United States European Command* (Stuttgart: History Office, Headquarters, USEUCOM, 1989), pp. 1–9.

[2]Frederiksen, *American Military Occupation*, pp. 155–61; D. J. Hickman, *The United States Army in Europe, 1953–1963* (USAREUR Operations Division Historical Section, 1964), p. 150, typescript Rpt held at CMH.

Chapter 3

[1]William R. Keylor, *The Twentieth-Century World, An International History* (New York: Oxford University Press, 1984), p. 290; see also "Annual Narrative Report, U.S.

Army EUCOM, 1 January–31 December 1950" (Karlsruhe: Historical Division, European Command, [1951]), hereafter cited as EUCOM Annual Report 1950, p. 9; Frederiksen, *American Military Occupation*, p. 198.

[2]*Campbell Barracks*, p. 15; G. Tays, "The U.S. Army Construction Program in Germany, 1950–1953," typed Ms (Historical Division, HQ USAREUR, 1955), p. 11 (hereafter cited as Tays, "U.S. Army Construction Germany, 1950–53"), CMH archives.

[3]EUCOM Annual Report 1950, pp. 34–36; Tays, "U.S. Army Construction Germany, 1950–1953," pp. 11–12.

[4]EUCOM Annual Report 1950, pp. 34–37. The EUCOM and USAREUR staffs were manned by the same personnel, so that separating the functions or actions of each was difficult. See "Annual Narrative Report, HQ, U.S. Army, Europe, 1 January–31 December 1950" (Karlsruhe: Historical Division, European Command, [1951]), pp. 4–12 (hereafter USAREUR Annual Report 1950), for a sketch of the history of USAREUR as a command entity. See also Frederiksen, *American Military Occupation*, pp. 150, 198.

[5]Frederiksen, *American Military Occupation*, p. 205.

[6]Tays, "U.S. Army Construction Germany, 1950–53," p. 9; Dod Ms, 16: 5–9.

[7]Tays, "U.S. Army Construction Germany, 1950–53," pp. 19–20.

[8]Ibid.

[9]Ibid., pp. 19–20, 47–50.

[10]Ibid., p. 9.

[11]Ibid., pp. 9, 48–50; Historical Division, HQ USAREUR, "The U.S. Army Deutsche Mark Construction Program, 1953–1957," prepared by David A. Lane, James J. Borror, and George W. Tays ([Heidelberg]: 1958), pp. 9–10 (hereafter cited as "U.S. Army Deutsche Mark Construction Program, 1953–1957"). Both these sources discuss the various agreements that regulated Deutschmark construction between 1950 and 1957.

[12]"Wiesbaden Housing Project Opens First of 400 Units" and "City Offers To Build Housing for Yanks," *Stars and Stripes*, European Edition, 17 Oct 49 and 12 Feb 50, respectively.

[13]USAREUR Annual Report 1950, pp. 106–07.

[14]"Kasernes Taken Over for Troops," *Stars and Stripes*, European Edition, 7 Oct 50.

[15]On the lines of command, see USAREUR Annual Report 1950, p. 28; Tays, "U.S. Army Construction Germany, 1950–53," pp. 21, 25–26, 46; Frederiksen, *American Military Occupation*, p. 165.

[16]Quote from Ltr, Maj. Gen. S. D. Sturgis, Jr., to Lt. Gen. Lewis A. Pick, 3 April 1952, Folder 210, Personal Papers of Lt. Gen. Samuel Davis Sturgis, Jr., 1897–1964, Chief of Engineers, Jan 53–Mar 56 (hereafter Sturgis Papers), OH HQUSACE. Sturgis' contemporary observations concerning the relationships among Teale, Noce, and Tulley are echoed in Interv, authors with General Andrew P. O'Meara (USA, Ret.), 18 Jan 91, Arlington, Va., pp. 27–28, 32–34, 36. O'Meara served as chief of logistics planning on the EUCOM staff in Heidelberg during this time.

[17]Interv, authors with O'Meara; Ltr, David H. Tulley to Karl C. Dod, 21 July 1974, Mil Files, XI–3–3, OH HQUSACE.

[18]Ltr, Tulley to Dod, 21 July 1974.

[19]USAREUR Annual Report 1950, p. 28; Tays, "U.S. Army Construction Germany, 1950–53," pp. 21, 25–26, 46; Frederiksen, *American Military Occupation*, p. 165.

[20]Frederiksen, *American Military Occupation*, p. 165; Tays, "U.S. Army Construction Germany, 1950–53," pp. 67–73.

[21]Tays, "U.S. Army Construction Germany, 1950–53," pp. 73–74.

[22]Ibid.

[23]Ibid. Tays refers to the construction as "cinder block," but it was more likely the German equivalent, *Bimsstein*, or pumice stone, according to Louis Brettschneider, EUD's expert in technical engineering.

[24]Ibid., pp. 59–60; "U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 43–44; "Billet Project Nears Finish in Grafenwöhr," *Stars and Stripes*, European Edition, 20 Sep 52. The article reviews previous construction at the site.

[25]Tays, "U.S. Army Construction Germany, 1950–53," pp. 63–68.

[26]Ltr, Tulley to Dod, 21 July 1974.

[27]"U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 43–44; chart 2, p. 61.

[28]Ibid., pp. 40–43.

[29]Ibid.

[30]Tays, "U.S. Army Construction Germany, 1950–53," p. 85; Frederiksen, *American Military Occupation*, p. 181, says late 1950 but appears to be in error.

[31]Tays, "U.S. Army Construction Germany, 1950–53," p. 86–92.

[32]Information on these projects at Grafenwöhr, Hohenfels, Wildflecken, and Baumholder is drawn from ibid., pp. 90–92.

[33]Ibid., pp. 90–92.

[34]Ibid., p. 92; "U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 47–48.

[35]Frederiksen, *American Military Occupation*, pp. 165–66; Tays, "U.S. Army Construction Germany, 1950–53," pp. 81–82.

[36]"EUCOM Plans Enclave To Cope with Housing," *Stars and Stripes*, European Edition, 22 Jul 49.

[37]Frederiksen, *American Military Occupation*, p. 169; USAREUR Annual Report 1950, pp. 107–08.

[38]Tays, "U.S. Army Construction Germany, 1950–53," p. 157.

[39]Frederiksen, *American Military Occupation*, p. 166.

[40]Tays, "U.S. Army Construction Germany, 1950–53," pp. 78–80.

[41]Ibid., pp. 81–83.

[42]"Engineer Aid for 1953 to German City: Projects in '53 Put at $500,000 by USAREUR," *Stars and Stripes*, European Edition, 8 Jan 54.

[43]See E. P. Hanifan, "The Army Lends a Helping Hand," *Military Engineer* 43 (July/August 1951): 279, for the details of this story. *Stars and Stripes* issues for the 1950s carry dozens of similar stories.

[44]Interv, authors with Robert Rodehaver, 31 Jan 90, Frankfurt.

[45]"First Game Ball Tossed from Copter," *Stars and Stripes*, 16 Jun 53.

[46]The documentation concerning the memorial to Mattson, including a copy of the speech, is in the Generallandesarchiv Karlsruhe, Germany.

[47]Alexander Rudhart, *Twentieth Century Europe* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1986), p. 288.

[48]Frederiksen, *American Military Occupation*, pp. 150–51.

[49]Maj. Gen. Bernard L. Robinson, "Base Development in Joint Logistic Planning," presentation to Industrial College of the Armed Forces, [22 Apr 54], pp. 16–17, Mil Files, XII–3–8, OH HQUSACE.

[50]Frederiksen, *American Military Occupation*, pp. 169, 170, 199; Hickman, *The United States Army in Europe, 1953–1963*, p. 151; "America Digs in on the Rhine," *Picture Post*, 15 Nov 52, pp. 13ff, Mil Files, XII–26–8; Ltr, Col. George E. Pickett to Lt. Col. A. M. Eschbach, 27 June 1953 (letter of commendation for Eschbach's personnel file), Mil Files, XII–27–9; A. M. Eschbach, "Construction in Germany, U.S. and French Zones," 138-page typed report prepared as a student project at the Engineer School at Fort Belvoir, [1953 or 1954], Mil Files, XII–27–8, Last three OH HQUSACE.

[51]"America Digs in on the Rhine," p. 14.

[52]Ltr, Pickett to Eschbach, 27 June 1953; Col. Eugene B. Ely, Deputy Commander, Western Area Command, "Report on Construction," 18 Dec 53, prepared for CINCUSAREUR, Mil Files, XII–27–9, OH HQUSACE; Frederiksen, *American Military Occupation*, p. 156–61.

[53]Ltr, Pickett to Eschbach, 27 June 1953; A. M. Eschbach, "Construction in Germany, U.S. and French Zones," p. 1.

[54]"Report on Construction," 18 Dec 53; "America Digs in on the Rhine," p. 14.

[55]"Report on Construction," 18 Dec 53.

[56]Eschbach, "Construction in Germany, U.S. and French Zone," p. 19.

[57]Ibid., p. 9.

[58]Ibid., pp. 12–13, 18; Ltr, Pickett to Eschbach, 27 June 1953.

[59]Eschbach, "Construction in Germany, U.S. and French Zone," pp. 20–26.

[60]Ltr, Pickett to Eschbach, 27 June 1953; Eschbach, "Construction in Germany, U.S. and French Zone," pp. 103–04.

[61]Eschbach, "Construction in Germany, U.S. and French Zone," pp. 103–04.

[62]Ibid., p. 1; Ltr, Pickett to Eschbach, 27 June 1953; Frederiksen, *American Military Occupation*, p. 170.

[63]This section is based on Lewis W. McBride, "A Brief History of The U.S. Engineer Group (TUSEG), U.S. Army Corps of Engineers, Ankara, Turkey, 1950–1954," [1965], pp. 1–2, typed Ms, EUD Record Holding Area (RHA), Frankfurt/Bonames, Box M–2–2. McBride was chief of the engineering-Construction Division of TUSEG.

[64]David H. Tulley, "The Military Construction Program," *Military Engineer* 46 (November/December 1954): 404–05; Frederiksen, *American Military Occupation*, p. 50.

[65]H.S. Miller, "Special Engineer Report," 22 Jun 52, p. 5, Mil Files, XII–27–1, OH HQUSACE; Dod Ms, 16: 40–41, 44–45. See also Miller, "American Engineers in Austria," *Military Engineer* 46 (May/June 1954): 177–79.

[66]Tulley, "Military Construction Program," pp. 404–05.

[67]The information is derived from two annual historical reports, one covering EUCOM, the other covering USAREUR—which for much of 1950 was an operational command: EUCOM Annual Report 1950, pp. 118–19; USAREUR Annual Report 1950, pp. 60–63, both in Headquarters, U.S. Army Europe, History Office, Heidelberg. See also Tulley, "Military Construction Program," p. 405; Frederiksen, *American Military Occupation*, p. 150.

[68]James S. Arrigona and W. R. Karsteter, "USEUCOM Joint Construction Agency, Historical Report, 15 January 1953–31 July 1957" (hereafter cited as Arrigona and Karsteter, "USEUCOM Joint Construction Agency"), p. 76, Mil Files, XII–30–2, OH HQUSACE.

[69]Dod Ms, 17: 2, 3, 7–8.

[70]"Report of Operations of Engineer Section," Headquarters, 7966th EUCOM Detachment, Office of the Engineer, 28 May 51, covering 1950 (hereafter Report of Engineer Section 1950), Mil Files, XII–27–6, OH HQUSACE; USAREUR Annual Report 1950, pp. 60–61.

[71]Dod Ms, 3: 45–46.

[72]Ibid., pp. 44, 48.

[73]EUCOM Annual Report 1950, pp. 34–36, 63.

[74] "COMZ Completes 2d Year of Manning Vital Supply Line," *Stars and Stripes*, European Edition, 8 Nov 52.

[75]"We're All Fouled Up in France," *Saturday Evening Post*, 11 Apr 53, p. 96; Report of Engineer Section 1950; Robinson, "Base Development in Joint Logistic Planning," p. 17; "Captieux Depot Lives Down Early Reputation To become One of Com Z's [*sic*] Most Modern Bases," *Stars and Stripes*, European Edition, 5 Apr 53.

[76]For this and the preceding paragraph, see "Yanks Wage War on Mud To Set Up Captieux Depot," *Stars and Stripes*, European Edition, 10 May 52, File "COMZ 1952," and "Building Sights [*sic*] of the 83d Engineers," fifteen-page newsletter printed June 1952 by the 83d Engineer Construction Battalion (Bordeaux: Imprimerie Delmas, 1952), p. 11, in file "US Army Engineers 1947–1954," both in *Stars and Stripes* Library, Darmstadt; and "We're All Fouled Up in France," p. 96.

[77]"We're All Fouled Up in France."

[78]For the list and this quotation, see "Factors Bearing on Construction Programs in France," 1 Feb 51 (document provided to Dod by Col. Hubert Klemp (USA, Ret.), former staff engineer for the brigade responsible for constructing the LOC across France) Mil Files, XII–27–6, OH HQUSACE.

[79]Ibid.

[80]Dod Ms, 17: 17.

[81]Ibid., pp. 16, 21; "Engineers Beat Schedule on Com Z Tent Project," *Stars and Stripes*, European Edition, 27 Sep [52].

[82]Tulley, "Military Construction Program," pp. 407–08.

[83]"Memos and Letters on LOC, 1950–52," Mil Files, XII–27–7, OH HQUSACE; Dod Ms, 17: 14.

[84]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 27ff.

[85]Dod Ms, 17: 20–21.

[86]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 76.

[87]Memo, Frank Pace, Jr., for the Secretary of Defense, 25 Nov 52, sub: Problems of Military Construction in France, Sturgis Papers, Folder 218, OH HQUSACE.

[88]For a discussion of the construction of American military air bases in the Mediterranean basin, see Robert P. Grathwol and Donita M. Moorhus, "Sand, Bricks, and Marble: U.S. Military Construction in the Mediterranean, the Middle East, and Africa during the Cold War," Unpubl Ms, 1998, OH HQUSACE.

[89]Tulley, "Military Construction Program," pp. 407–08; Frederiksen, *American Military Occupation*, p. 169; Dod Ms, 17: 3, 10, 28.

[90]"Building Sights of the 83rd Engineers," p. 14.

[91]Ibid., pp. 12–13.

[92]Frederiksen, *American Military Occupation*, p. 182.

[93]Tulley, "Military Construction Program," pp. 407–08; "We're All Fouled Up in France," p. 99; Dod Ms, 17: 12, 15, 16; "Com Z Hq at Orleans Directs Huge Supply Setup in France," *Stars and Stripes*, European Edition, 3 May 52.

[94]On the background to the creation of Joint Construction Agency (JCA), see Arrigona and Karsteter, "USEUCOM Joint Construction Agency."

[95]Ltr, Maj. Gen. S. D. Sturgis, Jr., to Maj. Gen. A. Bradshaw, Jr., 12 May 1952, Folder 212, and Ltr, Sturgis to Brig. Gen. G. E. Textor, 10 June 1952, Folder 211, both in Sturgis Papers, OH HQUSACE. The Sturgis papers contain good information on the problems COMZ faced in 1952.

Chapter 4

[1]"U.S. Army Deutsche Mark Construction Program, 1953–1957," p. 57–59.

[2]Ibid., p. 59.

[3]Tays, "U.S. Army Construction Germany, 1950–53," p. 11.

[4]"USAREUR Speeds Housing Program," *Stars and Stripes*, European Edition, 15 Sep 53; "U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 14, 29–30.

[5]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 34.

[6]Ibid., p. 32.

[7]"Locomotives Solve Housing Project Heating Problem," *Stars and Stripes*, European Edition, 25 Aug 54; "History of Construction of Central Heating Plant in Kornwestheim," paper in the private collection of H. J. Greene; Interv, authors with H. Jace Greene, 1 Jun 90, Liege, Belgium.

[8]Figures are derived from information in "U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 34–35, 58. Information in the following six paragraphs comes from the same report, pp. 40–61.

[9]Tays, "U.S. Army Construction Germany, 1950–53," pp. 125–30.

[10]"U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 50–51.

[11]Ibid., p. 51; Tays, "U.S. Army Construction Germany, 1950–53," pp. 143–47.

[12]"U.S. Army Deutsche Mark Construction Program, 1953–1957," p. 58.

[13]Ibid., pp. 47–48.

[14]James S. Arrigona and W. R. Karsteter, "USEUCOM Joint Construction Agency, Historical Report, 15 Jan. 1953–31 Jul. 1957," pp. 18–24, Mil Files, XII–30–2, OH HQUSACE, outlines the reorganizations that extended JCA's authority. See also Hickman, *United States Army in Europe, 1953–1963*, pp. 64–66.

[15]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 5–8; "Brief History of JCA," three-page typescript, n.d. [but mid to late May 1955 from internal evidence], no author, Mil Files, XII–30–6, OH HQUSACE.

[16]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 9–10.

[17]Ibid., p. 53.

[18]Ibid., p. 9. For the formation of other districts, see ibid., pp. 18, 20–22, 24, 27. See also "Brief History of JCA."

[19]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 9, 18, 20–27, 37.

[20]Ibid., p. 172–73; see also R. B. Warren, "Double Purpose Hospitals in France," *Military Engineer* 52 (September/October 1960): 402

[21]For a summary of each of the six agreements in question, see Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 30–32, and more generally on the process of contracting, pp. 40–47; see also "Construction Lead Time in France," Staff Study by the Command Construction Group, Assistant Chief of Engineers for Military Construction, 1 Jun 54, pp. 2–3, Mil Files, XII–30–6, OH HQUSACE.

[22]A good, short description of the process, listing nine stages, exists in "Brief History of JCA," pp. 2–3.

[23]Hickman, *United States Army in Europe, 1953–1963*, pp. 154–55.

[24]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 126.

[25]Arrigona and Karsteter list several such incidents in which funds were withdrawn after JCA had made commitments to the French; see especially pp. 96, 164–65, 239, 250–52.

[26]Ibid., pp. 283–84.

[27]Ibid., pp. 94–96, 164–65, and 253 for this and the subsequent paragraph. See also pp. 287–88 and, on the freeze of late 1954, pp. 239–41.

[28]Ibid., p. 249.

[29]Ibid., p. 253. To emphasize the point in the original, Robinson underlined the entire paragraph from which the passage here is taken.

[30]"Brief History of JCA," p. 1; "Construction Lead Time in France," Staff Study by the Command Construction Group, Assistant Chief of Engineers for Military Construction, 1 Jun 54, p. 1, Mil Files, XII–30–6, OH HQUSACE.

[31]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 362; for the reasons, see Parts IV (pp. 158–226) and V (pp. 227–355).

[32]Ibid., pp. 166–67, 286 (on Dreux), 363, 373; dates for the work at Dreux are derived from the citations rather than from the text.

[33]Ibid., pp. 284–85, for both this and the preceding paragraph, including the quotation.

[34]For this and the preceding two paragraphs, see ibid., pp. 250–52; on lead time, see pp. 363–64, 373.

[35]Ibid., p. 48.

[36]Ibid., p. 231.

[37]Dod Ms, 18: 26, Mil Files, XI–2–3, OH HQUSACE.

[38]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 318–21.

[39]Ibid., pp. 27–29.

[40]Ibid., pp. 321–23.

[41]Interv, authors with Edward Zawisza, 30 Jan 90, Frankfurt, pp. 1–2.

[42]Interv, authors with Saul Fraint, 9 Jun 90, Vienna, Austria, pp. 10–11.

[43]Tulley, "The Military Construction Program," *Military Engineer* 46 (November/December 1954): 408.

[44]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," figures from pp. 48–57.

[45]Hickman, *United States Army in Europe, 1953–1963*, pp. 156–57.

[46]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 206, 213, and the chart of the system of payments on p. 207.

[47]Hickman, *United States Army in Europe, 1953–1963*, p. 157; Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 208–14.

[48]Hickman, *United States Army in Europe, 1953–1963*, pp. 153–54.

[49]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 239.

[50]Ibid., p. 240; "Brief History of the JCA."

[51]Hickman, *United States Army in Europe, 1953–1963*, p. 152.

[52]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 284.

[53]On the construction of the pipeline, see Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 196–203.

[54]Ibid.; on the agreement with NATO, see Hickman, *United States Army in Europe, 1953–1963*, p. 156.

[55]James E. Walsh, "Engineers in the USAREUR Today," *Military Engineer* 50 (September/October 1958): 331–33.

[56]R. B. Warren, "Double Purpose Hospitals in France," *Military Engineer* 52 (September/October 1960): 402; Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 204–06.

[57]"Memorandum on Hospital-Housing," unsigned and hand-dated "about 14 Dec 52," and Memo, Lt. Col. Arthur J. Fallen to CG, USAREUR Communications Zone, 25 Nov 52, both in Sturgis Papers, Folder 218, OH HQUSACE.

[58]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 204–05, 307–08; James S. Arrigona, "Construction Progress in France," *Military Engineer* 50 (September/October 1958): 334.

[59]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 89–93, 110–12, 300–301. Quote from p. 301.

[60]Ibid., pp. 168–69.

[61]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 78–79.

[62]H. S. Miller, "Special Engineer Report," HQ, U.S. Forces in Austria, Office of the Engineer, U.S. Army, 22 Jun 52, pp. 3–5, Mil Files, XII–27–1, OH HQUSACE; Interv, authors with Fraint, pp. 1–12; Interv, authors with Adolph Faust, 11 Aug 89, Frankfurt, pp. 2–4; Dod Ms, 16: 40–41, 44–45.

[63]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 18, 47, 77; "Construction Progress–JCA," Mil Files, XII–30–6, OH HQUSACE. Internal evidence suggests that the latter document is from May or June 1955.

[64]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 128.

[65]"Construction Progress–JCA."

[66]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 20–24, 118.

[67]Ibid., pp. 118–20.

[68]Dod Ms, 20: 27; Arrigona and Karsteter, "USEUCOM Joint Construction Agency," p. 167, speaks of "the 502 million dollar Army and Air Force program in France" as of 1 October 1956.

[69]Ltr, Sturgis to Nold, November 1955, and Nold's reply, 11 December 1955, both in Sturgis Papers, Folder 307; Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 381ff.

[70]Hickman, *United States Army in Europe, 1953–1963*, pp. 75–76.

[71]Dod Ms, 18: 55–56.

[72]Ibid., 18: 57–58; Hickman, *United States Army in Europe, 1953–1963*, pp. 72–74, 140–41.

[73]Hickman, *United States Army in Europe, 1953–1963*, pp. 161–65.

[74]Dod Ms, 18: 58, citing Tulley to Sturgis; Ltr, Sturgis to Nold, November 1955, and the quoted passage comes from Ltr, Nold to Sturgis, 11 December 1955, both in Sturgis Papers, Folder 307; Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 381–82.

[75]Arrigona and Karsteter, "USEUCOM Joint Construction Agency," pp. 20–24, 382.

[76]Ibid., p. 383.

[77]Dod Ms, 20: 29.

Chapter 5

[1]"U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 9–13. On the concerns in France, see Chapter 3 of this study and Arrigona and Karsteter, "USEUCOM Joint Construction Agency, pp. 30–33.

[2]"U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 9–13.

[3]On the unique character of this aspect of operating in Europe, see Interv, authors with Terry Trowbridge, 10 Dec 91, pp. 40–43. See also, more generally, Interv, authors with Camblor, 11 Dec 91, pp. 2–6.

[4]"West German Governmental Infrastructure," 15 Jul 82, pp. 3–4, Europe Division, Records Holding Area, Frankfurt/Bonames (hereafter EUD-RHA), Box M–2–1.

[5]Ibid., pp. 2–3; Materials for Gribble Visit, "US Forces–Federal Republic of Germany (US-FRG) Proposed Engineer-Construction Agreement (1975)," 17 Mar 75, p. 1, EUD-RHA, Misc Docs.

[6]"Briefing by Director USACAG," 13 Oct 61, pp. 10–12.

[7]"Annual Historical Report, Headquarters, USAREUR, 1 Jul. 1956–30 Jun. 1957," pp. 285–87, CMH (hereafter cited as USAREUR AHR, FY 1957; "Brief History of JCA."

[8]Siemon and Wagberg, *Employment of Local Nationals*, p. 85.

[9]USAREUR AHR, FY 1957, pp. 285–87; "U.S. Army Deutsche Mark Construction 1953–1957," p. 9; USACAG Functional Manual [1960], p. 1, furnished by Reimer Delpin of EUD; see also Memo, William E. Camblor for Col. LeTellier, 2 Aug 68, sub: Chronological History of Construction Responsibilities in France and Germany, EUD-RHA, Box M–2–4, which gives a slightly different date for the change of name.

[10]USAREUR AHR, FY 1957, pp. 285–87; "U.S. Army Deutsche Mark Construction 1953–1957," p. 9; Interv, authors with Greene, pp. 20–21.

[11]For the agreements themselves, see *Ministerialblatt des Bundesministers der Finanzen*, 7, no. 40 (1 December 1956): 895–926; on Camblor's role, see Interv, William C. Baldwin and Paul K. Walker with William E. Camblor, 20, 28 May 87, Frankfurt, pp. 2–3, 33–35, 58,

and Interv, authors with Hasso Damm, 9 Aug 89, Frankfurt, pp. 2–4, as well as Intervs, authors with Camblor, 11 Dec 91, Frankfurt, pp. 5–6, and 9 Aug 89, pp. 2–4, 7–9, 19–20, 22–23. Camblor's career is sketched in *Corps' Line*, September 1987, and in an orientation issue (undated) for 1988. Copies of *Corps' Line* can be found in EUD-RHA or the EUD Public Affairs Office. Issues cited in this book are at OH HQUSACE.

[12]The account in this paragraph depends on information contained in the Baldwin and Walker interview with Camblor, pp. 12–13, 46, 58, and authors' interview with Fraint, pp. 13–14. See also authors' interviews with Washington and Prentiss.

[13]"USACAG Functional Manual," p. 2–4.

[14]Biographical Sketch of John Tambornino, prepared on his retirement (late 1974), provided by Louis Brettschneider, EUD.

[15]On consolidation, see Intervs, authors with Greene, pp. 20–21, and with Faust, pp. 17–18; on reduction of personnel, see Siemon and Wagberg, "The Employment of Local Nationals," pp. 85ff.

[16]Intervs, authors with Greene, pp. 17–18, and with Fraint, pp. 12–13, 24–25.

[17]Interv, authors with Paul Friesch, 22 Aug 89, Brussels, Belgium, pp. 2–7.

[18]Interv, authors with Louis Brettschneider, 26, 30 Jan 90, Frankfurt, pp. 10–11; "Hagana Veteran," *Corps' Line*, October 1982. The assessment of Brettschneider's talents derives from uniformly positive comments by other interviewees.

[19]"Works Council Chairman Pens Children's Books," *Corps' Line*, May 1989.

[20]Interv, authors with Hasso Damm, 9 Aug 89, pp. 1–4, 58; Interv, Paul K. Walker with Hasso Damm, 21 Jun 88, Frankfurt, pp. 3–4, OH HQUSACE.

[21]Interv, authors with Georgi Reitzel, 8 Aug 89, Frankfurt, pp. 1–9, 18–19.

[22]Siemon and Wagberg, "The Employment of Local Nationals," pp. 41–45, 91.

[23]Ibid., p. 93.

[24]Ibid., pp. 43–46, 92.

[25]Intervs, authors with Rodehaver, 31 Jan 90, p. 29, and with Greene, pp. 28–29.

[26]"Briefing by Director USACAG," 13 Oct 61, for visit 9–22 Oct 61 by Lt. Gen. Walter K. Wilson, Jr., to USAREUR, Mil Files, XII–43–1, OH HQUSACE; Dod Ms, 20: 38.

[27]USAREUR AHR, FY 1957, p. 269; "USACAG Functional Manual," p. 2; Interv, Baldwin and Walker with Camblor, p. 52; Interv, authors with Brettschneider, pp. 8–9.

[28]Intervs, authors with Damm, pp. 4–5, and with Greene, pp. 41–42.

[29] USAREUR AHR, FY 1957, p. 267; "Briefing for LTG Cassidy," 17 Jun 68, Office of the Commanding General, ENGCOM, EUD-RHA, Box M–2–2. The figure is extrapolated from the bar graph used in the briefing to show annual construction placement, 1957–1969.

[30]Hickman, *United States Army in Europe, 1953–63*, p. 73.

[31]The figures for 1958 through 1961 are those given by Camblor in his "Briefing by Director USACAG," 13 Oct 61, p. 9. More generally on USACAG, see Dod Ms, 20: 7–8, 38; Hickman, *United States Army in Europe, 1953–63*, pp. 73–74. Intervs, authors with Damm, pp. 4–5, 52–53; with Greene, pp. 30–31; with Brettschneider, pp. 88–89; with Friesch, pp. 8–12.

[32]"Briefing by Director USACAG," 13 Oct 61, p. 7. See also "Welcome to the USAREUR Engineer's Conference," [1965], section on NATO Infrastructure, provided by Louis Brettschneider.

[33]See "Briefing by Director USACAG," 13 Oct 61, and "Welcome to the USAREUR Engineer's Conference."

[34]For this definition, see note above and USAENGCOMEUR, "Information Brochure for OCE Inspection, 14–26 Feb 1972," p. I–4, EUD-RHA, Misc Docs; also Stanley W. Dziuban, "NATO Tour of American Infrastructure, *Military Engineer* 53 (September/October 1961): 341–42.

[35]On the area needed, see Intervs, authors with Karl Greulich, 15 Jun 90, Frankfurt, pp. 19–20, and with Georgi Reitzel, 8 Aug 89, Frankfurt, pp. 18–19.

[36]Interv, Baldwin and Walker with Camblor, p. 18; Intervs, authors with Friesch, pp. 12–13, with Greulich, pp. 10–13, and with Damm, pp. 4–5.

[37]Intervs, authors with Friesch, p. 12, and with Greulich, pp. 18–20; Dod Ms, 20: 38; Joseph J. Corey, Jr., "Soldiers and Builders," *Military Engineer* 67 (November/December 1975): 331–32.

[38]Dod Ms, 20: 38. Intervs, authors with Brettschneider, pp. 88–89, with Fraint, pp. 30–31; with Arthur Textor, 1 Feb 90, Frankfurt, pp. 4–6. See also Hickman, *United States Army in Europe, 1953–63*, pp. 73–74; Interv, Baldwin and Walker with Camblor, May 1987, p. 18.

[39]Interv, authors with John L. Shadday, 25 Jan 90, Frankfurt, p. 4; Hickman, *United States Army in Europe, 1953–63*, pp. 147–49, 169–70; Interv, Baldwin and Walker with Camblor, May 87, p. 25; "Pirmasens Depot Complex," 16 Oct 61, Briefing [for the visit of Lt. Gen. Walter K. Wilson to USACAG], five-page typed report with chart and diagram, Mil Files XII–36, OH HQUSACE.

[40]The description of the warehouse project is taken from "Pirmasens Depot Complex," 16 Oct 61. The timing of Wilson's visit to Germany is given in Dod Ms, ch. 20.

[41]See "Class V Depot—Verdun, Alternate Solution, Warehouse, Multipurpose 20,000 Sq. Ft.," a technical proposal submitted to USACAF on 2 June 1959 by Ammann & Whitney, Architect-Engineers, Bouchereau Papers, OH HQUSACE. See also Intervs, authors with Shadday, p. 4; with Friesch, p. 15; with Camblor, p. 25.

[42]Construction Justification Data Sheet, 6 Nov 62, Mil Files, XII–43–1, OH HQUSACE; "Class V Depot—Verdun." See also Intervs, authors with Shadday, p. 4; with Friesch, p. 15; with Camblor, p. 25.

[43]Interv, authors with Brig. Gen. James C. Donovan (USA, Ret.), 20 Nov 90, Arlington, Va., pp. 6–12. The site was near Thionville in the region near Metz.

[44]"History of TUSEG, 1958–1965," provided by the TUSEG Area Office, Incirlik, Turkey. Intervs, authors with Faust, pp. 76–77; with Textor, pp. 2–4; with Friesch, pp. 14–15; with Greulich, pp. 28–29.

[45]"Wiesbaden Housing Project Opens First of 400 Units" and "City Offers To Build Housing for Yanks," *Stars and Stripes*, European Edition, 17 Oct 49 and 12 Feb 50, respectively.

[46]On Alternate Construction, see "U.S. Army Deutsche Mark Construction Program, 1953–1957," pp. 36–40, 55; "Overview of USAREUR Real Estate Activities and Host Nation Negotiations," p. III–E–13–1, Unpubl Ms, Real Estate Division, Office of the Deputy Chief of Staff, Engineer, Headquarters, USAREUR and Seventh Army, Sep 88, preface by J. L. Fuentes, Chief, Real Estate Division.

[47]"Welcome to the USAREUR Engineer's Conference," [1965], section on Alternate Construction.

[48]Ibid.; "Overview of USAREUR Real Estate Activities."

[49]The information on this operation is drawn primarily from Intervs, authors with Brettschneider, pp. 78–100, and with Fraint, pp. 21–23.

[50]Quote from Interv, authors with Fraint, pp. 21–23.

[51]Interv, authors with Brettschneider, pp. 81–84.

[52]Ibid., pp. 84–85, and Intervs, authors with Fraint, pp. 21–23, and with Camblor, 9 Aug 89, pp. 39–41. Brettschneider recounts several other incidents of cooperation during operations in Berlin.

[53]Tele Intervs, authors with Col. Paavo Carlson (Ret.), 28 Sep 90; with Col. C. B. Lyle, Jr. (Ret.), 26 Oct 90; with Col. John Driskill (Ret.), 5 Nov 90; with Brig. Gen. Gilbert W. Kirby, Jr. (USA, Ret.), 9 Nov 90; with Maj. Gen. Drake Wilson (USA, Ret.), 29 Oct 90, Alexandria, Va.

[54]Erwin N. Thompson, *Pacific Ocean Engineers: History of the U.S. Army Corps of Engineers in the Pacific, 1905–1980* (Honolulu: Pacific Ocean Division, n.d.), ch. 6. See also William C. Baldwin, "Engineer Echelon-above-Corps Organization in the Pacific since 1941" (Office of History, Headquarters, U.S. Army Corps of Engineers, 1990).

[55]Office of the CG, ENGCOM, "Briefing for LTG Cassidy, 17 Jun 1968," attached chart of annual construction placement 1957 to 1969, and p. 11, EUD-RHA, Box M–2–2.

[56]See USACAG Organization and Functions Manual dtd 1 Jun 63, EUD-RHA, Box H–2–2.

[57]Interv, authors with Col. Carlyle Charles (Ret.), 31 Jan 90, Frankfurt, pp. 3–5.

[58]See authors' interviews with Fraint, Friesch, Brettschneider, and others.

[59]This account emerges from authors' interviews with people who served in USACAG, USAREUR, or the Engineer Element during the early 1960s. They include interviews with Maj. Gen. Robert P. Young (USA, Ret.), 30 Oct 90, Alexandria, Va., with Wilson, and with Greulich; also, authors' Tele Intervs with Lyle, with Carlson, with Driskill, with Kirby, and with William B. Dawes, 26 Oct 90. In addition, see authors' interviews with others who served with USACAG between 1961 and 1964: Brettschneider, Butschan, Charles, Faust, Fraint, Friesch, Damm, Greene, Rodehaver, and Shadday. Camblor passed over his return to USAREUR in Heidelberg in his interviews with Baldwin and Walker and with the authors. In comments on the manuscript addressed to the authors in February 1991, Camblor explained his reasons for accepting General Morris' invitation to serve in Heidelberg as a special assistant. On the incorporation of USARFEOF, see Memo, Camblor for Col. LeTellier, [2 Aug 68], sub: Chronological History of Construction Responsibilities in France and Germany"; Interv, authors with Charles, pp. 3–5.

[60]Memo, Camblor for Col. LeTellier; "USAREUR Engineer Element Responsibilities," 29 Sep 66, Mil Files, XII–43–1, OH HQUSACE.

Chapter 6

[1]Interv, authors with General Andrew P. O'Meara (USA, Ret.), 18 Jan 91, Arlington, Va., pp. 1–12.

[2]"Study of Proposed Consolidation of Military Construction Activities in Europe," 19 Oct 65, HQ, U.S. Army Audit Agency, Washington National Records Center, Access no. 86–0008, Box 6, RC 10–27–03–5–5, File 207–01.

[3]Ibid. Quote from Ltr, Jack O'Neill (Frankfurt) to William B. Dawes, 11 October [1965]. O'Neill was serving in the Engineer Element in Frankfurt; Dawes had recently returned from service in Frankfurt to a Corps of Engineers position in California. Dawes provided the letter to the authors.

[4]Interv, authors with Maj. Gen. Robert P. Young (USA, Ret.), 30 Oct 90, Alexandria, Va., for this and subsequent paragraphs. Also, Interv, Donita M. Moorhus with Maj. Gen. Robert P. Young (USA, Ret.), 9 Oct 91, Arlington, Va. See also Intervs, authors with Randolph S. Washington, 31 May 90, Chièvres, Belgium, pp. 1–4, and with Zawisza, p. 2. Concerning the creation of the Army Area Command, see "Military Community Study Project RED WHEEL," prepared by ODCSCOMPT, USAREUR, May 73, ann. B, pp. 4–5, OH HQUSACE. Stoughton's first name was Tom, not Thomas.

[5]Interv, Moorhus with Young, 9 Oct 91, pp. 1–4.

[6]Intervs, authors with O'Meara, p. 23, and Moorhus with Young, 9 Oct 91, p. 8–10.

[7]"Engineer Outfits Merging," *Stars and Stripes*, European Edition, 21 Jun 67; William C. Baldwin, "Engineer Organization in Germany, 1945–1990," *Future Army Peacetime Engineer Operations in Europe* (Washington, D.C.: U.S. Army Engineer Studies Center, 1991), pp. C–8

to C-12; Col. Brian B. O'Neill, "History of Eng Com Traces Back to '44: Eng Com's Role—Duties Far, Wide," two-page article attached to memoranda dtd 8 Nov 77, 1 Dec 77, and 15 Dec 77 regarding history of EUD, EUD-RHA, Box P-1-11. See also "Study of Proposed Consolidation of Military Construction Activities in Europe," 19 Oct 65, p. 7. As this study indicates, some construction is performed by the Navy in "selected locations."

[8]Interv, Moorhus with Young, 9 Oct 91, pp. 8–10.

[9]"Briefing for LTG [William F.] Cassidy," 17 Jun 68, Ofc of the CG, ENGCOM, p. 2, EUD-RHA, Box M-2-2.

[10]Ibid., pp. 4–5.

[11]Ibid.

[12]Ibid.

[13]Ibid., pp. 5, 8.

[14]Interv, Moorhus with Young, 9 Oct 91, pp. 8–10. Williams completed his tour in Europe at ENGCOM and left in the summer of 1967.

[15]"Briefing for LTG Cassidy," 17 Jun 68, pp. 4–5.

[16]See interviews by authors with the individuals named in the text; see also "Organizational Charts for USACAG, 1960," EUD-RHA, Box P-7-11; for ENGCOM, see the chart in "USAENGCOM Information Brochure, OCE Inspection, 14–26 Feb. 1972" (hereafter cited as "Information Brochure," 1972), EUD-RHA, Misc Docs. Also Intervs, authors with Donovan, pp. 41–42; with Brig. Gen. Kenneth W. Kennedy, 26 May 91, Newark, N.J., p. 11; with Fraint, pp. 7–8. See also Memo, Kennedy to Brig. Gen. Kelley, 24 Jul 68, sub: Infrastructure Program, EUD-RHA, Box M-1-11, which uses the term "trouble-shooter" in referring to his special assistant, Camblor. Interviews with ENGCOM and EUD commanders indicate that Camblor performed similar tasks for all of them.

[17]Interv, authors with Friesch, pp. 17–18.

[18]Intervs, authors with Washington, p. 1–4; with Zawisza, p. 2; with Rodehaver, 31 Jan 90, pp. 38–39. Interv, Paul K. Walker and William C. Baldwin with Robert Rodehaver, 24 Jun 87, Frankfurt, p. 6.

[19]"Civilian Personnel Management in U.S. Army Engineer Command, Europe: Survey Report Mar. 1973," p. 5, conducted by HQ USAREUR DSCPER CPD, EUD-RHA, M-1-11.

[20]Comptroller of the Army, "Program/Command Analysis of U.S. Army Europe," 30 Jun 71, pp. III-A-12 and -13, EUD-RHA, Misc Docs. Interv, authors with Hasso Damm, 9 Aug 89, pp. 19–20.

[21]During Kennedy's tour, the 39th was inactivated and its battalions put under the command of the 24th. Interv, authors with Kennedy, p. 24.

[22]Intervs, authors with Kennedy, p. 16, and with Col. Claude Roberts, 12 Feb 91, Washington, D.C., pp. 35–36.

[23]Frank U. Lahde, "Construction Assistance in Germany," *Military Engineer* 59 (March/April 1967): 117. See also "Briefing for LTG Cassidy," 17 Jun 68, p. 3; Intervs, authors with Young, with Maj. Gen. Carroll LeTellier, 19 Nov 91, Arlington, Va., and with Camblor, 9 Aug 89.

[24]"German Labor Service Celebrates 20th Anniversary," *Sword and Castle*, Oct 68.

[25]William M. Kennedy, "Civilian Labor Group, Germany," *Military Engineer* 59 (September/October 1967): 368. Intervs, authors with Kennedy, pp. 22–23; with Young, 30 Oct 90; with Roberts, pp. 8–9; with LeTellier, pp. 42–45; with Fraint, pp. 19–21. Interv, Baldwin and Walker with Camblor, p. 65.

[26]Interv, authors with Roberts, pp. 6–8; Cargill, "Shoulder to Shoulder," *Military Engineer* 65 (November/December 1973): 414.

[27]The description of the changes is most clearly delineated in "Briefing for LTG Cassidy," 17 Jun 68, pp. 14–15; concerning the unpopularity of the changes with local

commanders, see Interv, Lynn Alperin with Brig. Gen. Kenneth W. Kennedy, 23–24 Apr 84, Austin, Tex., pp. 345ff.

[28]"Briefing for LTG Cassidy," 17 Jun 68, pp. 17–18.

[29]For this feature of ENGCOM's activity, see ibid., p. 26.

[30]Ibid., pp. 16–20.

[31]"Military Community Study Project RED WHEEL," ann. B, pp. 4–6.

[32]Dod Ms, 20: 33–34.

[33]Interv, authors with Hasso Damm, 12 Dec 91, Frankfurt, p. 31, and with Jacques Bouchereau, 3 Aug 89, Frankfurt, pp. 12–13.

[34]Ltr, Kennedy to Brig. Gen. Roy S. Kelley, USAREUR Engineer, 21 October 1968, EUD-RHA, Box M–1–11.

[35]Intervs, authors with Bouchereau, pp. 25–27, 56–57; with Fraint, pp. 23–24; with Hasso Damm, 9 Aug 89, Frankfurt, pp. 53–55. "Building Miracle at Brussels School," *Army Times Europe*, 27 Mar 68. Concerning title and sovereignty over the property, see "Overview of USAREUR Real Estate Activities and Host Nation Negotiations," p. F–7–1.

[36]William M. Kennedy III, "A Joint Effort for a Joint Command," *Military Engineer* 61 (January/February 1969): 43.

[37]Intervs, authors with John Shadday, 25 Jan 90, Frankfurt, pp. 13–18, and with Erwin Grimm, 6 Jun 90, Nuremberg; Kennedy, "Joint Effort for a Joint Command," p. 43; *Military Engineer* 59 (September/October 1967): 368; "New EUCOM Nerve Center Is Dedicated at Stuttgart," *Stars and Stripes*, 8 Nov 68.

[38]"Overview of USAREUR Real Estate Activities." See also Dod Ms, 20: 33–34.

[39]Interv, Moorhus with Young, 9 Oct 91, pp. 10–12.

[40]See Daniel J. Nelson, *A History of U.S. Military Forces in Germany* (Boulder, Colo.: Westview Press, 1987), pp. 78–82, 88, 98.

[41]Ibid., pp. 147–51.

[42]"Briefing for LTG Cassidy," 17 Jun 68, p. 10.

[43]Ibid.

[44]Ibid., p. 11.

[45]Interv, Greenwood with Penney, p. 27.

[46]Intervs, authors with Kusiowski, pp. 30–31, and with Rodehaver, 31 Jan 90, pp. 44–46.

[47]USAENGCOMEUR, "Information Brochure," 1972, pp. I–6 to I–7, EUD-RHA, Misc Docs.

[48]"Overview of USAREUR Real Estate Activities," pp. I–A, III–E–13–1, VI–C–1. See also Memo, Camblor for LeTellier, 2 Aug 68, sub: Chronological History of Construction Responsibilities in France and Germany, EUD-RHA, Box M–2–4.

[49]Delpin, "Fact Sheet," 1 Nov 73, sub: To Answer the Chief of Staff's Request for a Description of Real Estate Acquisitions and Disposal Procedures and To Identify Major Problems, EUD-RHA, Misc Docs.

[50]"US Army Engineer Command Europe, Command Operating Budget, FY 1974," Mar 73, prepared for Carroll LeTellier and signed by Col. John C. Bell, EUD-RHA, Box M–1–7.

[51]Interv, authors with O'Meara, p. 17.

[52]Young's departure is dated from material in his scrapbook. Interv, Moorhus with Young, 9 Oct 91, pp. 12–13.

[53]Kennedy's arrival from his "Briefing for LTG Cassidy," 17 Jun 68, p. 17; Interv, authors with Kennedy, p. 1–3; Interv, Alperin with Kennedy, p. 344. Kennedy's promotion is dated according to letters in EUD-RHA, Box M–1–11.

[54]Ltr, Brig. Gen. Roy S. Kelley to Kennedy, 27 Oct 67, Tab M, EUD-RHA, Misc Files; also "Briefing for LTG Cassidy," 17 Jun 68, p. 20, for Kennedy's observation concerning Polk's remarks to him on his first day in Germany (17 October 1967).

[55]For this and the following paragraph, see Daniel E. McDonald, "Briefing Remarks for [Lt.] General [Walter K.] Wilson's Visit to Engineer Division," 7 Dec 64, and Ltr, Kelley to Kennedy, 27 October 1967, Tab L, both in EUD-RHA, Misc Files.

[56]Ltr, Kelley to Kennedy, 27 October 1967, Tabs L, M; Cargill, "Shoulder to Shoulder," *Military Engineer* 65 (November/December 1973): 414.

[57]"Briefing for LTG Cassidy," 17 Jun 68, pp. 22–23, for this and the subsequent paragraph. Kennedy gives the figure for boilers as 9,000 in this briefing. A figure of 10,087 is given for the date 1 July 1967 in Memo, Brig. Gen. Carroll LeTellier, 25 Apr 72, sub: Summary of USAENGCOMEUR Briefing Data, EUD-RHA, Box M–1–11.

[58]"Briefing for LTG Cassidy," 17 Jun 68, p. 22.

[59]Ltr, Kennedy to Polk, 4 March 1970, p. 2, referring to the meeting in September 1968, EUD-RHA, Box M–1–11. Also, Commander in Chief, U.S. Army, Europe, *Living and Working Conditions in the United States Army, Europe*, Special Report to Congress of the United States, 1 May 84, fig. 39.

[60]Intervs, authors with Kennedy, pp. 6–7; with Zawisza, pp. 14–18; with Washington, pp. 18–19. Ltr, Kennedy to Polk, 4 March 1970, p. 3, mentions the damage caused by unskilled troops manning boilers. See also Interv, Alperin with Kennedy, p. 361; Intervs, John T. Greenwood with Lt. Gen. Howard W. Penney, Dec 80–Dec 83, p. 26. "Briefing for LTG Cassidy," 17 Jun 68, pp. 22–23.

[61]Ltr, Kennedy to Maj. Gen. Charles C. Noble, 15 April 1970, EUD-RHA, Box M–1–11.

[62]"ENGCOM Chronicle for Facilities Engineering Directorate," Jul 74, p. 7, EUD-RHA, Box M–1–4/6; Annual Historical Summary, HQ USAREUR and Seventh Army, 1 Jan–31 Dec 72, p. 91, CMH. On the strength and influence of the coal lobby, see Interv, Donita M. Moorhus with Allen M. Carton, 14 Mar 97, Potomac, Md., pp. 113–19.

[63]On budget cuts, see Ltr, Kennedy to Noble, 28 July 1969; on the congressional moratorium that suspended the program, see "Budget Execution Review, FY 1973," signed by LeTellier, 15 Nov 72, EUD-RHA, Box M–1–7. On the percentage completed, see "Summary of Questions and Answers Covered at the Breakfast for Honorable Robert F. Froehlke Hosted by Commander, V Corps, on Tuesday, Feb. 13, 1973"; for the number of boilers replaced, see Ltr, LeTellier, 25 April 1972. Both in EUD-RHA, Box M–1–11.

[64]"Summary of Questions and Answers, Feb. 13, 1973"; "Items Discussed at OENGR Staff Meeting, Nov. 19, 1973," notes by Capt. Edward D. Hammond, Liaison Officer, EUD-RHA, Box M–1–7. Interv, authors with Kennedy, pp. 6–7. For a firsthand account of the boiler conversion program in the early 1970s, see Interv, authors with Ken Wunsche, 19 Nov 93, Frankfurt, passim.

[65]"Briefing for Maj. Gen. Fred Clarke's Visit to Engineer Division, 9 Nov. 1964," p. 3, EUD-RHA, Misc Files.

[66]The figures on dollars per square foot come from Kennedy's "Briefing for LTG Cassidy," 17 Jun 68, p. 34. Kennedy took the information from statistics maintained by OCE.

[67]See Intervs, Alperin with Kennedy, p. 351; Greenwood with Penney, pp. 25–26; authors with LeTellier, p. 18.

[68]The information on the $5 million from O'Meara is in "Briefing for CINC," 26 Aug 66, EUD-RHA, Misc Docs.

[69]Interv, Alperin with Kennedy, p. 352.

[70]"Briefing for LTG Cassidy," 17 Jun 68, pp. 20–21.

[71]Interv, Alperin with Kennedy, p. 353.

[72]"Briefing for LTG Cassidy," 17 Jun 68, pp. 20–21.

[73]Ltr, Kennedy to Lt. Gen. Andrew J. Boyle, CG V Corps, 16 December 1968, EUD-RHA, Box M–1–11.

[74]Ltrs, Kennedy to Noble, 12 May 1969, 21 April 1970, EUD-RHA, Box M–1–11.

[75]Ltr, Kennedy to Maj. Gen. Howard W. Penney, 21 March 1969, EUD-RHA, Box M–1–11.

[76]LeTellier, Debriefing Rpt to CINC USAREUR, 14 Aug 73, EUD-RHA, Box M–1–7.

[77]The figures are taken from two sources: Ltr, Kennedy to Maj. Gen. E. H. Almquist, CG, 8th Infantry Division, 2 April 1970, EUD-RHA, Box M–1–11, and "Fact Sheet, Subject: Summary of Stem to Stern Program," 24 May 1971, prepared by Col. Shelton B. Biles, DCS Contract Construction, EUD–RHA, Misc Files. Each source uses a slightly different base period for the figures.

[78]Interv, Alperin with Kennedy, p. 353.

[79]Ltr, Kennedy to Collins, 28 June 1971, EUD-RHA, Box M–1–11.

[80]MFR, LeTellier, 25 Apr 72, sub: ENGCOM Briefing Data, EUD-RHA, M–1–11; the figures for the facilities engineering budget for 1968 to 1972 are derived from anniversary addresses by Kennedy, 1 Nov 69, and LeTellier, 1 Nov 71, both in EUD-RHA, Box M–1–11.

[81]Glossary of Terms, Military Publications Pamphlet #310–1–3, 25 May 76.

[82]Interv, authors with Kennedy, p. 15; Interv, Carroll Purcell with Col. John C. Mattina, 9 May 88, Oxnard, Calif., OH HQUSACE. See also the description of one of the revetments that failed in MFR, Lt. Col. James M. Johnston, Executive Officer [ENGCOM], 6 May 70, sub: Visit to USAENGCOMEUR by CINCUSAREUR, p. 3, EUD-RHA, Box M–1–11.

[83]For TAB VEE as a "hot" project in Washington, see MFR, sub: Meeting with Mr. E. A. Rogner, OSD, Systems Analysis Team ... Frankfurt, Germany, 9 Aug 68, p. 4, where the cited passage is a paraphrase of Rogner's remarks; for figures for late 1968, see Ltr, Kennedy to Brig. Gen. Roy S. Kelley, 25 November 1968, both in EUD-RHA, Box M1–1–11; for the February 1969 record, see USAENGCOMEUR, "Information Brochure," 1972, p. III–9.

[84]Ayling, "Briefing, Air Force I G Team, TAB VEE Program," [Jan 1971], EUD-RHA, Misc Docs; "General Discussion of USAREUR DCSOPS Study (Project FENDER): An Examination of the Mission, Organization, and Functions of the U.S. Army Engineer Command," [Apr 72], EUD-RHA, Box M–1–11.

[85]"Briefing, Air Force I G Team, TAB VEE Program," [Jan 71].

[86]Interv, authors with Kennedy, pp. 12–13. For additional evidence of problems between the Air Force and ENGCOM, see Col. Niels H. Lund, USAF, "Solicitation of Bids, TAB VEE," 14 Jan 71; Memo, Col. Shelton B. Biles for Chief of Staff, 14 Jan 71, sub: Air Force Letters Concerning TAB VEE Construction; MFR, Biles, 19 Jan 71, sub: Telephone Call from Colonel Lund, Director, Engineering and Construction AEFRC, USAFE; MFR, Biles, sub: General Polk's Briefing by USAREUR Engineer on 20 Jan 71. All in EUD-RHA, Misc Docs. See also Memo, William E. Camblor to Dept of the Air Force, Col. Steele, 17 Dec 71, sub: Time Losses and Added Costs on Projects Due to Air Force Delays in Approval of Funding, which mentions fifteen case summaries as being sent; and Memo, LeTellier to Col. Robert C. Thompson, DCS–Civil Engineering, USAFE, 22 Feb 72, sub: Approval and Funding of Changes to Air Force Construction Contracts. Both in EUD-RHA, Misc Docs.

[87]For the description of the fire in following paragraphs, see Intervs, authors with Kennedy, pp. 9–11; with Brettschneider, 26, 30 Jan 1990, pp. 39–40, 42–43; with Friesch, pp. 69–70; with Greene, p. 29; with Textor, pp. 32–34; with Inge Kusiowski, 9 Aug 89, Frankfurt, pp. 30–31; with Fraint, pp. 27–28. Interv, Walker and Baldwin with Hasso Damm, 21 Jun 88, Frankfurt, pp. 33–36; Ltr, Kennedy to CG, HQ V Corps, 26 May 1969; Memo, Kennedy to CINC USAREUR, 27 Jan 69; Ltr, Kennedy to Col. Burke, 27 June 1969; Ltr, Kennedy to CINC USAREUR, 5 January 1970; Ltr, Kennedy to Oberburgermeister Prof. Dr. Willi Brundert, 16 May 1969. All in EUD-RHA, Box M–1–11.

[88]Interv, authors with Kennedy, pp. 9–11.

[89]Ibid., p. 11.

[90]Interv, Martin Reuss with Brig. Gen. Charles C. Noble, 22–23 Sep 81, OH HQUSACE.

[91]Ltr, Kennedy to Kelley, 21 March 1968, EUD-RHA, Box M–1–11.

[92]MFR, Lt. Col. James M. Johnston, Exec. Officer [ENGCOM], 6 May 70, sub: Visit to USAENGCOMEUR by CINCUSAREUR, p. 5, EUD-RHA, Box M–1–11.

[93]Interv, authors with Col. Daniel Waldo, Jr., 31 Aug 89, Frankfurt, pp. 2–5; USAENGCOMEUR, "Budget Execution Review FY 1973," signed by LeTellier, EUD-RHA, Box M–1–7; "Ammo Storage Improvement Program—MCA," n.d., EUD-RHA, Misc Docs.

[94]Interv, authors with LeTellier, pp. 6, 18.

[95]Ibid., pp. 19, 21–23, 28–29; Interv, authors with Kennedy, p. 12.

[96]LeTellier's 5th Anniversary Msg, 1 Nov 71, EUD-RHA, Misc Docs.

[97]"Instructions for Engineer Command Long Range Plan Ad Hoc Committee," 13 Mar 72, signed by LeTellier; "Report of the Ad Hoc Committee on the Long Range Plan for the Engineer Command Europe, Jun. 15, 1972," ann. A, both in EUD-RHA, Box M–2–4.

[98]USAENGCOMEUR, "Information Brochure" 1972, pp. I–4 to I–6, III–24, V–2 to V–6, and VI–2 to VI–6, EUD-RHA, Misc Docs.

[99]For the full list, see Memo, LeTellier to CINCUSAREUR and Seventh Army, 10 Apr 72, EUD-RHA, Box M–1–11.

[100]The dollar figures from 1967–1970 come from the ENGCOM Long Range Plan. Other dollar figures come from USAENGCOMEUR, "Information Brochure" 1972, pp V–2 to V–5.

[101]For a good summary treatment of the tension between commanders and ENGCOM, see LeTellier, Debriefing Rpt to CINC USAREUR, 14 Aug 73, pp. 3–4, EUD-RHA, Box M–1–7. Interv, authors with LeTellier, pp. 34–37.

[102]"Overview of USAREUR Real Estate Activities," pp. III–E–21ff.

[103]Ibid.

[104]USAENGCOMEUR, "Information Brochure" 1972, p. IV–3.

[105]"Overview of USAREUR Real Estate Activities," pp. III–E–21ff.

[106]Buxton, Comptroller, Decision Paper to Commanding General, 16 Aug 71, sub: DM Revaluation, EUD-RHA, Misc Docs.

[107]Interv, authors with Washington, pp. 42–44.

[108]Memo, LeTellier, 25 Apr 72; see also attachment to "General Discussion of USAREUR DCSOPS Study (Project FENDER)," 10 Apr 72, p. 2, both in EUD-RHA, Box M–1–11, 6G. For slightly different figures, see USAENGCOMEUR, "Information Brochure," 1972, p. III–23.

[109]Intervs, authors with Fraint, pp. 26–27, and with LeTellier, pp. 57–60.

[110]Ltr, LeTellier to Maj. Gen. F. P. Koisch, 19 July 1973, EUD-RHA, Box M–1–11; William E. Camblor, "Amplified Record of Engineering Experience," 9 Sep 77, Bouchereau Papers, OH HQUSACE.

[111]"Overview of USAREUR Real Estate Activities," p. III–E–21–1. The slowdown in work under MOUSF I is noted in Ltr, Donovan to Maj. Gen. D. A. Raymond, 25 Jan 74, EUD-RHA, Misc Docs.

[112]Ltr, Kennedy to Brig. Gen. H. R. Aaron, V Corps, 21 July 1971, EUD-RHA, Misc Docs Kennedy's description in this letter parallels the description of remote site construction given in an earlier document. The description in this and the following paragraph is a composite of the two. The earlier document (see esp. p. 2) is MFR, Lt. Col. James M. Johnston, 6 May 70, sub: Visit to USAENGCOMEUR by CINCUSAREUR, EUD-RHA, Box M–1–11.

[113]The information concerning remote sites derives primarily from three documents: Memo, LeTellier, 25 Apr 72, sub: Summary of USAENGCOMEUR Briefing Data, EUD-RHA, Box M–1–11; Ltr, LeTellier to Maj. Gen. F. P. Koisch, 19 July 1973; table of projects

with notes entitled "Border Camps," and dated "as of 15 Nov. 1973," EUD-RHA, Misc Docs.

[114]MFR, Letellier, 9 Aug 68, sub: Meeting with Mr. E. A. Rogner, OSD, Systems Analysis Team, EUD-RHA, M–1–11.

[115]ODCSCOMPT, USAREUR, "Military Community Study Project RED WHEEL," May 73, ann. B, pp. 4–5, OH HQUSACE; Interv, authors with Kennedy, pp. 3–5.

[116]"USAREUR Area Support Service Activity Study, Subject: District Engineer Reorganization, ENGCOM," 27 Jan 70, EUD-RHA, Misc Docs; "Report of the Ad Hoc Committee on the Long Range Plan for the Engineer Command Europe," 15 Jun 72, p. 81.

[117]Decision Paper, Brig. Gen. Hugh J. Bartley, DCSCOMPT, to Chief of Staff, 27 Apr 73, sub: Review of the DCSOPS Engineer Command Study (FENDER II), EUD-RHA, Misc Docs.

[118]Interv, Martin A. Reuss with Maj. Gen. Francis P. Koisch, 5–6 Mar 90, San Antonio, Tex., pp. 2–9, OH HQUSACE; Interv, authors with LeTellier, pp. 39–42.

[119]"Review of the DCSOPS Engineer Command Study (FENDER II)."

[120]LeTellier Debrief Ltr to CINCUSAREUR, 14 August 1973, p. 3, provided to the authors by LeTellier.

[121]Interv, authors with Donovan, pp. 1–30.

[122]Ltr, Donovan to Brig. Gen. Milton E. Key, Cdr., 56th Artillery Brigade, EUD-RHA, Box M–1–11.

[123]DF, Col. James G. Campbell, 19 Mar 74, sub: Consolidation of Headquarters and Area Support Elements, Tab J of Decision Paper to Chief of Staff [USAREUR] from Project CHASE, OH HQUSACE (see also Tab A); Memo, Maj. Gen. Harold I. Hayward for Commander in Chief, 22 Mar 74, sub: Project CHASE, OH HQUSACE, current files; Lt. Col. John L. Buxton, "EUD History," typescript Ms, n.d., EUD-RHA, Box P–7–9 (hereafter cited as Buxton History); "Annual Report of Major Activities, HQ, U.S. Army Europe and Seventh Army, 1 Jan. to 31 Dec. 1974," 7 Apr 76, pp. 13–17, CMH (hereafter cited as Annual Report USAREUR, 1974).

[124]The U.S. Army Topographic Center had been put under Engineer Command in FY 1973.

[125]Buxton History; Briefing Materials for Visit by Lt. Gen. William C. Gribble, 23–25 Mar 75, "Formation of EUD, Fact Sheet," 20 Mar 75, EUD-RHA, Misc Docs (hereafter cited as Materials for Gribble Visit, with reference to the particular document).

[126]Buxton History; Annual Report USAREUR, 1974, pp. 13–17.

[127]Annual Report USAREUR, 1974, p. 17.

[128]Materials for Gribble Visit, "Personnel Status," 21 Mar 75, and "Formation of EUD, Fact Sheet, 20 Mar 1975."

[129]For a firsthand commentary on this uncertainty, see Interv, authors with Reimer Delpin, 9 Jan 90, Frankfurt, pp. 13–14. For a description of the work carried out by the team led by McNeely and the attitudes that prevailed in OCE, see Interv, Donita M. Moorhus with David A. Spivey, 25 Oct 96, Alexandria, Va., pp. 39–52, OH HQUSACE.

[130]ESC Studies Center, "EUD Organization Study," Apr 85, EUD-RHA, Box M–1–8.

[131]Interv, authors with Terry Trowbridge, 10 Dec 91, Frankfurt, pp. 10–12.

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[1]Interv, authors with Brig. Gen. James C. Donovan, 20 Nov 90, Arlington, Va., p. 40.

[2]Interv, authors with Maj. Gen. Louis W. Prentiss, Jr., 14 Sep 90, Indian Beach, Del., pp. 1–9.

[3]Memorandum of Agreement between the Commander in Chief, U.S. Army, Europe, and the Chief of Engineers, Department of the Army, 1 Apr 74, EUD-RHA, P–7–11.

[4]Buxton History; Briefing Materials for Gribble Visit, "Formation of EUD, Fact Sheet," 20 Mar 75, EUD-RHA, Misc Docs.

[5]The agreements are in EUD-RHA, Misc Docs, and Boxes M–1–10 and M–1–11.

[6]Interv, authors with Prentiss, pp. 10, 18–19, 56.

[7]Min of Staff Mtg, 11 Mar 75, EUD-RHA, M–1–11; Interv, authors with Maj. Gen. Drake Wilson, 29 Oct 90, Alexandria, Va., pp. 10–11. We have chosen to use Europe Division; early documents use European Division.

[8]Memo, Prentiss to HQDA (DAEN-EPA-U), 12 Sep 75, sub: Proposed Civilian Manpower Reduction, p. 3, EUD-RHA, M–1–12.

[9]Annual Report USAREUR, 1974, pp. 2–4, 15, CMH.

[10]Ibid.; Fact Sheet, "Analysis of USAEDE Organization," 15 Aug 74, p. 5, EUD-RHA, Misc Docs.

[11]"Analysis of USAEDE Organization," 15 Aug 74, p. 3.

[12]Organizational Charts from 1 Aug 74, 1 Sep 74, 1 Dec 74, 1 Feb 75, 1 Jun 75, and 1 Aug 75, all provided by Reimer Delpin, EUD; "Analysis of USAEDE Organization," 15 Aug 74, p. 3.

[13]Interv, authors with James Wise, 1 Feb 90, Frankfurt, Germany, pp. 4–7.

[14]Interv, authors with Dave Cox, 13 Dec 91, Frankfurt, Germany, pp. 11–14.

[15]Ltr, Prentiss to Gribble, 17 January 1975, and Gribble's reply, 18 February 1975, EUD-RHA, M–1–12 and M–1–9, GO Corresp, respectively; Interv, authors with Lt. Col. Roy Brown, 25 Aug 89, Hoensbroek, Netherlands, pp. 16–18; see also an incomplete draft of Ltr, Prentiss to Gribble, 10 October 1974, EUD-RHA, M–1–12.

[16]EUD, Gen Orders Nos. 10, 11, 12, 13, 5 May 75, EUD-RHA, Misc Docs; for the change of name, see Staff Summary Sheet, 30 Apr 75, "Organization of Area Offices," EUD-RHA, P–7–11.

[17]Memo, Maj. Gen. Warren C. Moore, HQ TUSLOG (USAFE) to American Personnel, 7 Nov 77, sub: Background Information, provided by TUSEG Area Office, Incirlik, Turkey.

[18]Talking Paper, DAEN-ECM, [Robert] Hall, 15 May 75, sub: "OSD Draft Audit Report on Consolidation of EUD and MDD Headquarters," NA, RG 77, Access no. 86–0008, Box 6, RC 10–27–03–5–5(hereafter cited as Talking Paper, 15 May 75); "Realignment Fact Sheet: Transfer of Design and Construction in Italy, Greece, and Turkey to US Army Engineer Division, Europe," n.d., but attached to a memo dtd 30 Sep 75, EUD-RHA, P–7–9 (hereafter cited as "Realignment Fact Sheet").

[19]For a summary of the OSD position and OCE's counterarguments, see Talking Paper, 15 May 75. See also "OCE Comments on OSD 'Draft Report on Review of Consolidation of Army Engineer Divisions in Europe,'" 28 Feb 75, p. 12 (hereafter cited as "OCE Comments on OSD Draft Report," 28 Feb 75, NA, RG 77, Access no. 86–0008, Box 6, RC 10–27–03–5–5; and "Realignment Fact Sheet."

[20]Talking Paper, 15 May 75.

[21]For information concerning the area offices of EUD, see Annual Rpt USAREUR, 1974, p. 2, and EUD Briefing for Command Inspection, 1977, Bouchereau Papers, OH HQUSACE.

[22]"Annual Historical Review, 1 Jul. 1975–30 Sept. 1976," p. 65, Office of the Chief of Engineers (hereafter cited as OCE AHR, with appropriate dates), Gen Files, 8–4, OH HQUSACE; "Engineer's Corner," *EUD Information Bulletin*, 1 Apr 76; see also MFR, 9 Jun 76, sub: MDD-EUD Milcon Transfer, EUD-RHA, Misc Docs.

[23]Memo, Prentiss to HQDA (DAEN-EPA-U), 12 Sep 75, sub: Proposed Civilian Manpower Reduction, pp. 1–3, EUD-RHA, M–1–12; for the quotation, see Prentiss to Gribble, 11 May 76, EUD-RHA, M–1–7.

[24]MFR, E. Scott Chronister, 17 Aug 84, sub: EUD Request for Assistance—USAREUR Request for Organizational Justification, based on documents and conversations with

Fred McNeely and other OCE personnel involved in the transition, Civil Works Files, I–20–1, OH HQUSACE. Chronister was chief of the Organization and Studies Branch, Management and Program Analysis Division, Directorate of Resource Management, in OCE. See also Interv, authors with Frederick B. McNeely, 15 Feb 91, Arlington, Va.; Interv, Moorhus with David A. Spivey, 25 Oct 96, Alexandria, Va., pp. 39–64; and Ltr, O'Neill to Dawes, 11 October [1965], provided by William B. Dawes, archived with documents related to this manuscript at OH HQUSACE.

[25]"Civilian Personnel Management in U.S. Army Engineer Command, Europe, Survey Report," Mar 73, survey conducted by HQ, USAREUR DCSPER CPD, p. 3, EUD-RHA, M–1–11.

[26]Interv, authors with Hasso Damm, 9 Aug 89, Frankfurt, Germany, pp. 15–16. On Tambornino's retirement, see Intervs, authors with Greene, pp. 46–47, 55–56, and with Col. Edwin S. Townsley, 15 Feb 91, Alexandria, Va., p. 14. On Wheeler's appointment, see Intervs, authors with Prentiss, pp. 18–19, and with Ralph Wheeler, 12 Feb 91, Arlington, Va., pp. 1–2; Interv, Moorhus with Spivey, p. 59.

[27]For the quotations in the paragraph, see "OCE Comments on OSD Draft Report," 28 Feb 75.

[28]Interv, authors with Wise, 1 Feb 90, pp. 7–8, 59–61.

[29]MFR, R. L. Rousseau, 18 Apr 79, sub: OAS Accomplishments, EUD-RHA, M–1–12. The document provides a two-page summary of the history of Office of Administrative Services' accomplishments under Rousseau's leadership beginning 6 November 1974.

[30]Interv, authors with Wise, 1 Feb 90, pp. 2–4.

[31]Interv, authors with Wheeler, pp. 2–5, 44. See also Interv, authors with Wise, 1 Feb 90, passim.

[32]The personal dislocation felt by employees is not reflected in official documents. See Intervs, authors with Richard Birner, 12 Jun 90, Nuremberg, pp. 20–22;with Louis Brettschneider, 26, 30 Jan 90, Frankfurt, pp. 33–38; with Brown, pp. 44–46; with Damm, 9 Aug 89, pp. 14–17; with Reimer Delpin, 29 Jan 90, Frankfurt, pp. 13–14; with Saul Fraint, 9 Jun 90, Vienna, Austria, pp. 33–36; with Karl Greulich, 15 Jun 90, Frankfurt, pp. 31–32; with Rodehaver, 31 Jan 90, pp. 41–47; with John Shadday, 25 Jan 90, Frankfurt, pp. 6–7, 14; with Stanley Sikirica, 29 Jul 90, Frankfurt; with Washington, pp. 36–37; with Ralph Wheeler, 12 Feb 91, Arlington, Va.; with Wise, 1 Feb 90, pp. 2–5; with Zawisza, pp. 21, 29–34.

[33]Briefing, Dir, USACAG, for Lt. Gen. Walter K. Wilson, Jr., 13 Oct 61, Mil Files XII–43–1, OH HQUSACE.

[34]Interv, authors with Damm, 9 Aug 89, pp. 15–16.

[35]Interv, Paul K. Walker with Hasso Damm, 21 Jun 88, Frankfurt, pp. 16–17.

[36]On the persistence of the tension, see Interv, authors with Maj. Gen. Norman G. Delbridge, Jr., 14 Feb 91, Washington, D.C., pp. 40–44.

[37]Materials for Gribble Visit, "Personnel Status," 21 Mar 75, and chart dated 1 Jan 75 among EUD charts and graphics for briefings; Ltr, Prentiss to Gribble, 10 Oct 75, quarterly report, and Gribble's reply, 8 Dec 75, both in EUD-RHA, M–1–12.

[38]Ltr, Gribble to Prentiss, 11 September 1975, EUD-RHA, M–1–9. Memo, Prentiss to HQDA (DAEN-EPA-U), 12 Sep 75, sub: Proposed Civilian Manpower Reduction, p. 2, EUD-RHA, M–1–12.

[39]Ltr, Gribble to Prentiss, 8 December 1975, EUD-RHA, M–1–12; for the suggestion of temporary help, specifically for the Office of Administrative Services, see Command Inspection, Aug 75, p. 18, EUD-RHA, M–1–9.

[40]Command Inspection, Aug 75, p. 14, and Prentiss' reply of 11 Nov 75 to this Rpt, p. 11–12, both in EUD-RHA, M–1–9.

[41]Interv, authors with Prentiss, pp. 10–12, 40–41, quotation from the latter pages; see also Min of EUD Staff Mtg, 2 Sep 75, EUD-RHA, M–1–11.

[42]Intervs, authors with Prentiss, pp. 30–31, and with Washington, pp. 37–38.

[43]A number of sources contribute to this account of the struggle over Greene's retirement. See Intervs, authors with Prentiss, pp. 12, 40–44; with Cox, pp. 10–11, 17–19; with Greene, pp. 46–53; with McNeely, pp. 15–16, 21–23; with Townsley, pp. 21–22; with Washington, pp. 33–34, 63–64, 77–78. See also Ltr, Prentiss to Gribble, 11 May 1976; Min of Staff Mtg, 2 Sep 75.

[44]Command Inspection, Aug 75, pp. 2, 4, 13.

[45]On the problems of turnover, see ibid., pp. 11–12, and Prentiss' Memo of November 1975 responding to this Rpt, pp. 8–9, EUD-RHA, M–1–9; see also Interv, authors with Kathleen Johnson, 25 Jan 90, Frankfurt, pp. 6–8, and "Brig. Gen. G. K. Withers to Employees during Mar. 1981," p. 3, provided by General Withers.

[46]"Finance and Accounting Systems," [n.d., probably between May and August 1975], EUD-RHA, M–1–9; EUD Organizational Charts, 1 Aug, 6 Sep 74, 1 Jun 75.

[47]On the fourteen-column ledgers, see Interv, authors with Townsley, p. 20; see also Interv, authors with Washington, pp. 35–36, and with Johnson, pp. 13–14; Annual Report USAREUR, 1974, p. 122, chart 4.

[48]Materials for Gribble Visit, "Management Information Systems," 18 Mar 75, pp. 1–2; Command Inspection, Aug 75, pp. 11–12.

[49]On Washington's recruiting in the United States, see Intervs, authors with Johnson, p. 5, and with Washington, pp. 57–58; more generally, see Interv, authors with McNeely, pp. 10–15; EUD Briefing for Command Inspection [n.d., but a Delbridge briefing], EUD-RHA, M–1–9.

[50]Draft functions manual, 6 Mar 74, EUD-RHA, Misc Docs. See also Interv, authors with Wheeler, pp. 3–9, 19, and Debriefing Rpt, Brig. Gen. James C. Donovan to CINC USAREUR and Seventh Army, 22 Aug 74, p. 3, EUD-RHA, Misc Docs.

[51]Interv, authors with Wheeler, pp. 3–9, 19; Donovan to CINC USAREUR and Seventh Army, 22 Aug 74, p. 3; Msg, Maj. Gen. [D. A.] Raymond to Donovan, 19 Aug 74, EUD-RHA, M–1–11.

[52]Interv, authors with Wheeler, pp. 3–5. See also a draft of Prentiss' first Ltr to chief of engineers [September/October 1974], p. 7, EUD-RHA, M–1–12, and Fact Sheet, "Analysis of USAEDE Organization," 15 Aug 74, EUD-RHA, Misc Docs.

[53]"Peculiarities of the Europe Division," 29 Sep 82, in a briefing book for Maj. Gen. Ames S. Albro, Jr., European Trip, 22 Oct 82, Mil Files XIV–1–8a, OH HQUSACE; see also the citations for the next several paragraphs, all of which bear on this issue of the Design Branch.

[54]Intervs, authors with Brettschneider, 26, 30 Jan 90, pp. 45–48, and 12 Dec 91, pp. 5–14.

[55]Ibid.

[56]Ibid.

[57]Interv, Paul K. Walker and William C. Baldwin with Joe G. Higgs, May 87, Frankfurt, pp. 150–52.

[58]"Design Workload: Inhouse, Indirect, & Direct," graphics chart for briefings, EUD-RHA, unmarked box of graphics and transparencies; Intervs, authors with Brettschneider, 26, 30 Jan 90, pp. 47–48.

[59]"Analysis of USAEDE Organization," 15 Aug 74, p. 3; Intervs, authors with Wheeler, pp. 3–11, 19, 22–23; with Brettschneider, 26, 30 Jan 90, pp. 35–36; with Faust, pp. 49–51; with Shadday, pp. 6–7; with Prentiss, pp. 17–18.

[60]Intervs, authors with Wheeler, pp. 8–9; with Delbridge, pp. 57–58; with Prentiss, pp. 16–17. Delbridge Briefing on EUD, n.d. [late 1977?], Bouchereau Papers, OH HQUSACE. Organization charts for EUD provided by Reimer Delpin show that the Design Branch existed in May 1976 but no longer existed in September.

[61]Quoted passages are from Ltr, Prentiss to Maj. Gen. B. C. Burnell, 13 February 1976, which includes a copy of the original agreement, EUD-RHA, M–1–9. See also Ltr, Prentiss to Gribble, 10 October 1974.

[62]Intervs, authors with Zawisza, pp. 33–34; with Rodehaver, 31 Jan 90, pp. 43–44; with Prentiss, p. 10; with Brettschneider, 12 Dec 91, pp. 28–29.

[63]Interv, authors with Brettschneider, 12 Dec 91, p. 29.

[64]Ibid.; Ltr, Prentiss to Gribble, 10 October 1974.

[65]Ltr, Prentiss to Gribble, 10 October 1974.

[66]"Debriefing Report, [Brig. Gen. James C. Donovan] to Commander in Chief , US Army, Europe, and Seventh Army," 22 Aug 74, EUD-RHA, Misc Docs; Ltr, Prentiss to Burnell, 13 February 1976 with attachments, and handwritten notes, "Problems To Discuss w/ Gen. Morris," [August 1975], both in EUD-RHA, M–1–9; Ltr, Prentiss to Gribble, 10 October 1974.

[67]Interv, authors with Wheeler, p. 19.

[68]Briefing graphics, "The European Division, The Cutting Edge of New Ideas! A Case Study on FE Support," [1975], EUD-RHA, P–7–11; Ltr, Prentiss to Gribble, 10 October 1974; Fact Sheet prepared for the visit of Gen Gribble, 23–26 Mar 75, "Support to Facilities Engineers," 21 Mar 75, for this and the preceding paragraph, EUD-RHA, M–1–7.

[69]Interv, authors with Washington, pp. 84–88, and with Prentiss, pp. 19–22.

[70]The quoted passages are from Interv, authors with Wheeler, pp. 19–22. See also Min of Staff Mtg, 7 Jan 75, p. 2, EUD-RHA, M–1–11; "OCE Comments on OSD Draft Report," 28 Feb 75, p. 5; Ltr, Prentiss to Gribble, 14 July 1975, Quarterly Rpt, EUD-RHA, M–1–12; EUD Briefing [by Delbridge], n.d. [late 1977], pp. 18–21, Bouchereau Papers, OH HQUSACE; "EUD Bulletin," January 1977, p. 1; "EUD Facilities Support to USAREUR," FY 1976 1st Quarter Briefing, EUD-RHA, Misc Docs.

[71]For the quotations, see Command Inspection, Aug 75, p. 11–12, 20, EUD-RHA, M–1–9.

[72]Quoted passages are from Ltr, Prentiss to Maj. Gen. B. C. Burnell, 13 February 1976, and the attachments thereto, respectively, EUD-RHA, M–1–9. See also "Problems To Discuss w/ Gen. Morris," EUD-RHA, M–1–9. General Morris headed the inspection team.

[73]Intervs, authors with Washington, pp. 84–88, and with Prentiss, pp. 19–22.

[74]In late 1975 the position formerly titled engineer, USAREUR and Seventh Army, was redesignated deputy chief of staff, engineer, USAREUR. Quotations and material for this paragraph are drawn from Ltr, Prentiss to Gribble, 11 May 1976, EUD-RHA, M–1–7.

[75]Ltr, Prentiss to Burnell, 13 February 1976. See also "Problems To Discuss w/Gen. Morris"; Interv, authors with Delbridge, pp. 40–46.

[76]Ltr, Prentiss to Gribble, 11 May 1976.

[77]Min of Staff Mtg, 11 May 76, pp. 1–2, EUD-RHA, M–1–9.

[78]Min of Staff Mtg, 25 May 76 [Delbridge's first meeting], pp. 1–2, and similar minutes, 7 Jun 76, p. 1, EUD-RHA, M–1–9.

[79]Interv, authors with Delbridge, pp. 40–41.

[80]Min of Staff Mtg, 22 Jun 76, p. 1, EUD-RHA, M–1–9.

[81]Interv, authors with Delbridge, pp. 52–54, 65–67.

[82]Unmarked box of old bulletins and editions of *Corps' Line*, EUD-RHA. Before Kappa's arrival, several issues of an "EUD Information Bulletin" had appeared. Kappa dropped "Information" from the title and began renumbering issues with Volume 1, Number 1, in November 1976.

[83]Interv, authors with Delbridge, pp. 65–68; see also minutes of staff meetings for 1976 and 1977, especially Gary Loew's handwritten notes from the meetings. Loew was hired by Prentiss as administrative assistant and continued under Delbridge. The notes are

among a set of handwritten minutes to staff meetings that Loew recorded, in EUD-RHA, M-1-12. Also Interv, authors with Schempp, pp. 18–25.

[84]Interv, authors with Col. Carlyle Charles (Ret.), 31 Jan 90, Frankfurt, pp. 23–24.

[85]Interv, authors with Delbridge, pp. 99–102; the same rendition of the quotation from Snow appears almost word for word in Gary Loew's handwritten notes, EUD-RHA, M-1-12.

[86]MFR, Delbridge, sub: Fund Accountability, 28 May 76, EUD-RHA, M-1-9.

[87]The description in this and the next several paragraphs is derived from the minutes of the weekly staff meetings and from Intervs, authors with Charles, pp. 23–25; with Shadday, p. 11; with Delpin, pp. 19–20; with Birner, pp. 13–14; with Wheeler, pp. 31–34; with Brown, pp. 57–58; with Trowbridge, pp. 16–18; with Lt. Col. Lloyd Colio, 6 Jun 90, Stuttgart, pp. 48–51; with Jose Cruz, 19 Nov 91, Hurst, Tex., pp. 41–44.

[88]The comments quoted are from Intervs, authors with Brown, pp. 57–58, and with Charles, pp. 23–25; Interv, William C. Baldwin with Allan B. Aaron, 21–22 Jun 88, Frankfurt, p. 106. Delbridge's retrospective assessment of the board's usefulness may be found in his interview by authors, pp. 99–102.

[89]Min of Staff Mtg, 24 Jan 77 (not in Loew's handwriting), EUD-RHA, M-1-12.

[90]For this and the following paragraph, see Ltr, Delbridge to All Employees, 20 June 1977, EUD-RHA, Misc Docs, which traces the history of Delbridge's efforts concerning personnel.

[91]Ibid. See also EUD Briefing by Delbridge, n.d. [late 1977], Bouchereau Papers, OH HQUSACE.

[92]Min (handwritten) of Staff Mtg, 21 Mar 77, point C, "Garrett/McNeely Observations on Trip," and 19 Apr 77, EUD-RHA, M-1-12.

[93]Min of Staff Mtg, 23 May 77, EUD-RHA, M-1-12; Ltr, Delbridge to All Employees, 20 June 1977; Interv, authors with Delbridge, pp. 49–52.

[94]"Hail to Our Chiefs," *Corps' Line*, March 1978; Min of Staff Mtg, 3 Oct 77, EUD-RHA, M-1-12; Info Bulletin, EUD, 1 Nov 76; Interv, authors with Cruz, pp. 1–8.

[95]Intervs, authors with Delbridge, pp. 45–46, 56–58, and with Joe G. Higgs, 23 Jan 90, Frankfurt, p. 10, and 6 Jan 91, Cincinnati, Ohio, pp. 11–15; Interv, Walker and Baldwin with Higgs, pp. 111, 134.

[96]The quoted phrases are respectively from Ltr, Burnell to Prentiss, 25 May 1976, EUD-RHA, M-1-9, and Ltr, Prentiss to Morris, 26 January 1977, Mil Files XII-41-12, OH HQUSACE. Examples of Prentiss's correspondence with Delbridge, Burnell, and Morris may be found as follows: Ltrs, Prentiss to Delbridge, 1 June 1976, and to Burnell, 21 June 1976, both in Mil Files X 11-41-12, OH HQUSACE, and Prentiss to Morris, 8 Nov 76, NA, RG 77, Access. no. 86-0008, Box 6, RC 10-27-03-5-5.

[97]In addition to the correspondence among Prentiss, Burnell, and Delbridge mentioned in the preceding footnote, the description of this situation is derived from comments in authors' interviews with Delbridge, pp. 49–52; with Charles, pp. 18–19, 24–27, 43; with Wheeler, pp. 31–34; with Wilson, pp. 55–58; with Prentiss, pp. 53–55.

[98]The quoted phrases in this paragraph and the passage in the next paragraph concerning Delbridge's position come from his lengthy letter of 4 November 1977, "USAREUR Suggested Changes in the Way EUD Does Business," EUD-RHA, M-1-9. This is a reply to Prentiss' proposals, contained in Prentiss' letter to Burnell, 8 September 1977, referred to in Delbridge's letter.

[99]Interv, Frank N. Schubert with Lt. Gen. Ernest Graves (USA, Ret.), Mar, Apr 85, Arlington, Va., pp. 114, 117–18, 123, 185, OH HQUSACE.

[100]Interv, authors with Delbridge, pp. 49–52.

[101]Ibid.; Interv, Walker and Baldwin with Higgs, pp. 132–35, quotation from pp. 177–78.

[102]*Stars and Stripes*, European Edition, 13 Aug 78; Memo, Gary Loew, 25 May 78, sub: In-Processing Procedures, EUD-RHA, Hist Files; Ltr, Delbridge to Brig. Gen. Richard M. Connell, OCE, 9 December 1977, EUD-RHA, M–1–9; Ltr, Brig. Gen. Drake Wilson to Lt. Gen. John W. Morris, 2 October 1978, EUD-RHA, M–1–12. For figures on staff strength, see also Ltr, Prentiss to Gribble, 10 October 1975, Quarterly Rpt Ltr, EUD-RHA, M–1–12, and "EUD in Perspective, 1976–78," a spiral-bound survey of EUD's programs (no page numbers) which the division put out in 1978.

[103]Interv, authors with Delbridge, pp. 1, 32–36, 38–39.

[104]Interv, authors with Herbert Wooten, 8 Aug 89, Frankfurt/Bonames, pp. 3–7, 13–14, 16–19. The quotation is from p. 22.

[105]The quotations are, respectively, from MFR, William E. Camblor, 29 Dec 75, sub: Conference with Mediterranean Division (MDD) on Procedures in Italy, Turkey, and Greece, p. 3, and Min of Staff Mtg, 27 Jan 76, both in EUD-RHA, Misc Docs. For the paragraph in general, see also "Arrivals and Departures," and "MED Area," in "EUD Information Bulletin," 1 Mar, 1 Dec 76, respectively; Intervs, authors with Wooten, pp. 6–7, 13–14, 16–17, and with Delbridge, pp. 1, 32–36, 38–39.

[106]Interv, authors with Delbridge, pp. 32–36.

[107]Interv, authors with Wooten, p. 13; TUSEG History, 1965–1984, unpaginated, provided by TUSEG Area Office, Incirlik, Turkey.

[108]Interv, authors with Cruz, pp. 46–54.

[109]Intervs, authors with Birner, pp. 16–18; with Brown, pp. 57–58; with Helga Butschan, 16 Jun 90, Kriftel, Germany, pp. 48–50; with Charles, pp. 25, 43; with Damm, 9 Aug 89, p. 17; with Delpin, pp. 19–20; with Dodd Rufe, 25 Jan 90, Frankfurt, p. 29; with Zoltan Varga, 12 Jun 90, Nuremberg, Germany, p. 10.

Chapter 8

[1]"Delbridge Bids Farewell," *Corps' Line*, July 1978.

[2][Press Release], n.d. [Aug 78], sub: Brig. Gen. Delbridge Reassigned, EUD-RHA, unmarked box, on file with documents from this project at OH HQUSACE; "Biography," Maj. Gen. Drake Wilson, 29 Aug 80, OH HQUSACE. For a discussion of Wilson's positions in 1971–1973 with VII Corps and the 7th Engineer Brigade, of which he was "assistant engineer," see Interv, authors with Maj. Gen. Drake Wilson, 9 Oct 90, Alexandria, Va., pp. 29–32.

[3]Interv, Baldwin with Aaron, pp. 110–11; also Intervs, authors with Hasso Damm, 9 Aug 89, Frankfurt, pp. 18, 23–24, and with Wilson. Staff Mtg notes, 1 Aug 78, EUD-RHA, M–1–11; Interv, Walker with Damm, pp. 19–28; Intervs, authors with Terry Trowbridge, 10 Dec 91, Frankfurt, pp. 16–18, and with Jose Cruz, 19 Nov 91, Hurst, Tex., pp. 44–45.

[4]For this and the next paragraph, see chart on "Personnel Trends" in the pamphlet "EUD in Perspective, 1976–1978," [1978 pamphlet, no page numbers]; "Engineers Build Up on Personnel," *Stars and Stripes*, European Edition, 13 Aug 78.

[5]Min of Staff Mtg, 30 Oct 78, EUD-RHA, M–1–11, comments by Tom Turner in Personnel; Min of Staff Mtg, 12 Feb 79, EUD-RHA, M–1–12.

[6]Interv, authors with Wilson, pp. 48–49; Interv, Walker and Baldwin with Higgs, 20, 21, 27 May 1987, pp. 134–36; Min of Staff Mtg, 12 Feb 79, EUD-RHA, M–1–12.

[7]Bruce H. Siemon and Roland E. Wagberg, *Employment of Local Nationals*, p. 93–94; Interv, authors with Damm, 9 Aug 89, pp. 6–8.

[8]Interv, Walker with Damm, pp. 28–29; Interv, authors with Damm, 9 Aug 89, pp. 6–11.

[9]Interv, authors with Wilson, pp. 48–49; Interv, Walker and Baldwin with Higgs, pp. 134–36; Min of Staff Mtg, 12 Feb 79, EUD-RHA, M–1–12; Interv, authors with Damm, 12 Dec 91, pp. 9–10; Interv, Walker with Damm, pp. 50–52.

[10]Interv, Walker with Damm, pp. 30–32.

[11]"EUD Program Review & Analysis, 4th Quarter FY 79," chart on personnel strength for FY 79, with explanations, EUD-RHA, Misc Docs, and with EUD/Glasgow Documents, OH HQUSACE.

[12]Ltr, Wilson to Lt. Gen. Morris, 27 June 1979, sub: Status of Projects, with EUD/Glasgow Docs at OH HQUSACE; Min of Staff Mtg, 14 Aug 79, EUD-RHA, M–1–12; "EUD Program Review & Analysis, 4th Quarter FY 79," chart on personnel strength for FY 79; "EUD Program Review and Analysis, 4th Quarter, FY 80," chart on personnel strength, p. 21, EUD-RHA, Misc Docs.

[13]Min of Staff Mtgs, 12, 20 Feb 79, EUD-RHA, M–1–12; Interv, authors with Joe G. Higgs, 6 Jan 92, Cincinnati, Ohio, pp. 89–92.

[14]Min of Staff Mtg, 13 Nov 78, EUD-RHA, M–1–11.

[15]Engineer Studies Center, *USAEDE (EUD) Organization Study*, Apr 85, p. 86, EUD-RHA, M–1–8.

[16]Interv, authors with Wilson, pp. 12–13.

[17]Intervs, Baldwin and Walker with Camblor, pp. 20–21, and with Wilson, pp. 21–25, 41–44.

[18]Discussion paper, R. Washington, "Elimination of the Area Offices," 5 May 80, EUD-RHA, M–1–8. For this and subsequent paragraphs, see Intervs, authors with Dave Cox, 13 Dec 91, Frankfurt, pp. 7–10, and with Cruz, pp. 34–41.

[19]For this and the next paragraph, see Disposition Form (DF), J. Bouchereau, 14 Jul 80, sub: Field and Construction Division Reorganization, Bouchereau Papers, OH HQUSACE.

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[21]Interv, authors with Trowbridge, pp. 3–4.

[22]Ibid.

[23]Interv, authors with Wilson, p. 10.

[24]Ibid.

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[26]Intervs, authors with Damm, 9 Aug 89, pp. 36; with Brettschneider, 12 Dec 91, p. 36; with Camblor, 11 Dec 91, p. 7; with Trowbridge, pp. 22–24; with Jakoba Schempp, 12 Dec 91, Frankfurt, pp. 36–37, 41–43.

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[28]Interv, authors with Maj. Gen. George K. Withers, Jr., 11 Feb 91, Washington, D.C., pp. 4–6, for this and the following paragraph.

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[30]Intervs, authors with Withers, pp. 11–12, and with Higgs, 23 Jan 90, pp. 25–26; Interv, Walker and Baldwin with Higgs, pp. 184–86.

[31]"FY 82: Success & Smoother Sailing," *Corps' Line*, October 1982; Interv, Walker and Baldwin with Higgs, pp. 184–86; Interv, authors with Higgs, 6 Jan 92, pp. 94–96.

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[33]Interv, authors with Higgs, 23 Jan 90, pp. 25–26.

[34]"SAME Announces Engineering Awards," *Engineer Update*, May 1982; "Employees Receive S.A.M.E. Awards," *Corps' Line*, July 1982. The quoted passages are from the award citation; Interv, authors with Higgs, 6 Jan 92, pp. 30–38. Higgs also received a Meritorious

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[36]Withers to EUD Employees, Mar 81, p. 3, typescript copy provided by Withers.

[37]Ltr, Withers to Bratton, 13 May 1981, EUD-RHA, M–2–1; Ltr, Withers to Bratton, 17 September 1981, provided by Withers; Interv, authors with Kathleen Johnson, 10 Dec 91, Frankfurt, pp. 10–11.

[38]Ltrs, Withers to Bratton, 13 May, 17 September 1981.

[39]EUD CONUS Recruiting Team Report, [internal dating, Mar–Jun 81], EUD-RHA, M–2–1.

[40]Ltr, Withers to Bratton, 17 September 1981.

[41]Ibid.; Intervs, authors with Prentiss, pp. 29–32, and with Washington, pp. 37–40, 77–78; Ltr, Withers to Bratton, 13 May 1981.

[42]Intervs, authors with Withers, pp. 16–20, and with John Blake, 1, 6 Feb 90, Frankfurt, pp. 37, 85; "Special Award," *Corps' Line*, November 1981.

[43]Ltrs, Withers to Lt. Gen. Bratton, 20 January, 3 May 1982; MFR, Seitz, 20 Apr 82, all in EUD-RHA, M–2–1.

[44]Ltr, Wilson to Morris, 2 October 1978; Min of Staff Mtgs, 5, 26 Mar 79; Ltr, Wilson to Morris, 27 June 1979, sub: Status of Projects, all in EUD-RHA, M–1–12; DF, Col. R. E. Abbott, 19 Apr 82, sub: New EUD Annex, EUD-RHA, M–2–1; also "More Space Coming Up," *Corps' Line*, August 1982.

[45]Interv, authors with Rodehaver, 31 Jan 90, pp. 30–32.

[46]Ltr, Prentiss to Lt. Gen. Morris, 26 January 1977, sub: DCSENG USAREUR Quarterly Report, p. 6.

[47]Interv, Walker and Baldwin with Higgs, pp. 144–45; Interv, authors with Higgs, 23 Jan 90, pp. 32–35.

[48]Interv, authors with Withers, pp. 35–36; Ltr, Withers to Bratton, 3 May 1982, p. 2

[49]Ltr, Withers to Bratton, 3 May 1982, p. 2.

[50]*Corps' Line*, July 1982.

[51]DF, Records Management Office (RMO), Walker, 1 Jul 82, sub: Establishment of Planning Branch, Engineering Division, p. 2, EUD-RHA, M–1–6.

[52]Interv, Walker and Baldwin with Higgs, pp. 121, 189; Interv, authors with Maj. Gen. James van Loben Sels, 12 Apr 91, Fort Monroe, Va., pp. 64–65.

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[54]Intervs, authors with Dale, pp. 7–15, and with Higgs, 23 Jan 90, pp. 35–36.

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[59]Interv, authors with Cox, pp. 19–21, 26–28.

[60]Interv, authors with Richard Grimm, 19 Jun 90, Incirlik, Turkey, pp. 10–13; Ltr, Withers to Bratton, 3 May 1982.

[61]Interv, authors with Withers, pp. 44–45.

[62]Interv, authors with Blake, 1, 6 Feb 90, pp. 89–93.

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[66]TUSEG History, 1965–1984; Intervs, authors with R. Grimm, pp. 6–8, and with Veronica Rovero, 19 Jun 90, Incirlik, Turkey, pp. 17–18.

[67]Interv, authors with Julia Pat Hensley, 19 Jun 90, Incirlik, Turkey, pp. 3–4.

[68]Memo, Col. Cowles for the Commander [EUD], 8 Oct 81, sub: Trip Report, Turkey, October 1981, p. 2, TUSEG Area Office Files.

[69]Ibid., p. 1, including the quotation concerning work at Erzurum.

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[73]Intervs, authors with Ray, pp. 32–37; with R. Grimm, pp. 39–42; with Blake, 1, 6 Feb 90, pp. 66–68.

[74]Interv, authors with R. Grimm, pp. 39–42.

[75]Intervs, authors with Withers, pp. 66; with Rovero (from which the quotation in the first sentence is taken), pp. 8–10, 14–16; with R. Grimm, pp. 6–8; with Hensley, pp. 12–13.

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[77]Interv, authors with Maj. Gen. Scott B. Smith, 29 Apr, 2 May 91, Golden, Colo., pp. 128, 132–33.

[78]Intervs, authors with Smith, pp. 41–45, and with Damm, 9 Aug 89, pp. 26–27; Interv, Baldwin with Aaron, pp. 116–18. Aaron described the procedures as "sloppy." See also Interv, authors with Trowbridge, pp. 18–19, 24–25, 30–32.

[79]Interv, authors with Smith, pp. 20–24.

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[82]Intervs, authors with Smith, pp. 105–07, and with Blake, 1, 6 Feb 90, pp. 4–7.

[83]Interv, authors with Smith, pp. 115–18.

[84]Ibid., pp. 20–24.

[85]The quotations come respectively from Intervs, authors with Withers, pp. 56–58, and with Richard Wisdom, 29 Jan 90, Frankfurt, pp. 19–20.

[86]Interv, authors with Wisdom, pp. 19–20.

[87]For the first quotation, see Ltr, Withers to Bratton, 20 January 1982; for the second, see Ltr, Withers to Bratton, 2 May 1982, both in EUD-RHA, M–2–1. For additional indications that all was not well, see Intervs, authors with Withers, pp. 56–58; with Wilson, pp. 12–13, 58; with Smith, pp. 20–24; with van Loben Sels, pp. 45–49.

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[94]Interv, authors with Smith, pp. 136–38.

[95]Interv, Baldwin with Aaron, pp. 118, 119; Interv, authors with Damm, 9 Aug 89, pp. 18–20, 26–27.

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[97]Interv, authors with van Loben Sels, pp. 1–30.

[98]On van Loben Sels, see particularly Interv, authors with Damm, 9 Aug 89, pp. 21–22, and Interv, Baldwin with Aaron, p. 119; see also Intervs, authors with Lt. Col. Lloyd Colio, 6 Jun 90, Stuttgart, pp. 33, 34; with Lt. Col. Grosvenor W. Fish, Jr., 11 Jun 90, Nuremberg, p. 30; with Constantaras, pp. 31–32; with Moravec, 19 Jan 90, pp. 38–39; with Russell Minton, 18 Nov 91, Dallas, Tex., pp. 19–21; with Schempp, pp. 61–63.

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[117]Intervs, authors with Damm, 9 Aug 89, p. 30; with Minton, pp. 60–61; with Dale, p. 54; with Constantaras, pp. 31–32; with Carson, pp. 35–36; with Schempp, pp. 63–71; with Col. Dan Waldo, 31 Aug 89, Frankfurt, pp. 71–72; with J. Dodd Rufe, 25 Jan 90, Frankfurt, p. 28.

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[129]Ltr, Van Loben Sels to Heiberg, 16 August 1985, EUD, RM; "Employees Urged To Contribute to Model Division Program"; "Operation Cleanup: Model Division Initiative Program Gets New Emphasis," *Corps' Line*, December 1987; "Contracting Seminar: Europe Division Instructs Community Staff Members," *Corps' Line*, May 1988.

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[141]"Division's EQM Gains National Spotlight," November 1987; "Total Quality Management Process Debuts at Pentagon," February 1988; "Corps Chief Addresses Europe Division Staff," May 1988. All in *Corps' Line*.

[142]"Commander's Comments," *Corps' Line*, May 1988.

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[144]Interv, Walker and Baldwin with Ray, pp. 71–76.

Chapter 9

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[3]Delbridge, "Sept. 78 Revised Briefing," pp. 2, 3, 6–7; [Delbridge], EUD Command Management Briefing, p. 3; "No Work Shortage for EUD Engineers"; for 1986, see Command Briefing, Brig. Gen. Harty Visit, 24 Jul 86, p. 3, EUD computer files.

[4][Delbridge], EUD Command Management Briefing, p. 3; Engineer Studies Center, "U.S. Army Engineer Division, Europe (EUD): Organization Study," Apr 85, pp. 14–15, EUD-RHA, M–1–8 (hereafter cited as ESC, "USAEDE [EUD]: Organization Study").

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[6]ESC, "USAEDE (EUD): Organization Study," 1985, p. 11–13.

[7]MFR, William Camblor, 29 Dec 75, sub: Conference with Mediterranean Division on Procedures in Italy, Turkey, and Greece, EUD-RHA, Misc Docs.

[8]Ltr, Smith to President, TEMET USA, Inc., 19 Dec 83, EUD-RHA, M–1–6; Intervs, authors at sites in Turkey, 20 Jun 90, pp. 47–51; Interv, authors with Maj. Gen. James W. Ray, 5 Feb 90, Heidelberg, p. 38–40.

[9]Interv, authors with Richard Grimm, 19 Jun 91, Incirlik, Turkey, pp. 1–3.

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[12]"West German Governmental Infrastructure," pp. 3–4.

[13]Ibid.

[14]Ibid.

[15]"Presentation of the Department of the Army Outstanding Civilian Service Award to Dipl[om].-Ing[enieur]. Viktor Krupinski, Director, *Bautechnische Arbeitsgruppe*, Frankfurt," 26 Feb 76, EUD-RHA, Misc Docs.

[16]Interv, Baldwin with Aaron, p. 97.

[17]Ltr, Withers to Maj. Gen. Ames S. Albro, Jr., HQ USACE, n.d. [Sep 82?], for this and the next several paragraphs, EUD-RHA, M–2–1.

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[19]"Customer Handbook," pp. 11–12.

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[21]ESC, "USAEDE (EUD): Organization Study," ann. F, p. F–5.

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[24]"Briefing on EUD's Mission," [Delbridge, 1976], pp. 13–15, 17–18, 25–27; "Users' Manual," pp. 23–25. The "Users' Manual" parallels Delbridge's briefing on process, but contains more on other topics. For the 1980s, see "Customer Handbook," p. 30.

[25]"Briefing on EUD's Mission," [Delbridge, 1976], pp. 17–18, 25–27.

[26]Ibid.

[27]Ibid.

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[35]On value engineering, see MFR, Jacques Bouchereau, 1 Nov 83, and draft Ltr, 30 September 1983, prepared by Fred Wissel for William Camblor's signature, both in Bouchereau Papers, OH HQUSACE; "Customer Handbook," pp. 47–50; Interv, authors with Dave Cox, 13 Dec 91, Frankfurt, p. 48, and with Joe G. Higgs, 6 Jan 92, Cincinnati, Ohio, pp. 67–74. The discussion in subsequent paragraphs is drawn from these sources.

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[37]Intervs, authors with Ray, pp. 46–48; with Col. John Moravec, 19 Jan 90, Frankfurt, pp. 33–35; with Lt. Col. C. Leslie Rose, 14 Jun 90, Würzburg, pp. 27–32.

[38]"Briefing on EUD's Mission," [Delbridge, 1976], p. 12.

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[46]Nelson, *History of U.S. Military Forces in Germany*, pp. 101–02.

[47]Interv, authors with Camblor, 11 Dec 91, pp. 14–16.

[48]The list of eligible categories comes from a pamphlet issued by NATO entitled "NATO Common Infrastructure."

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[50]ESC, "USAEDE (EUD): Organization Study," p. 15; "West German Governmental Infrastructure"; and Interv, authors with John Blake, 1, 6 Feb 90, Frankfurt, pp. 68–70.

[51]ESC, "USAEDE (EUD): Organization Study," p. 15; "West German Governmental Infrastructure"; Interv, William C. Baldwin and Paul K. Walker with William E. Camblor, 20, 28 May 87, Frankfurt, p. 86.

[52]"EUD in Perspective, 1976–78."

[53]In addition to "EUD in Perspective 1976–78," see telex communiqué, 18 May 78, sub: Support of Construction for USSA-I, Teheran, Iran, Conversation between General Delbridge and Connell, Week of 8 May 78, Transatlantic Program Center Records Holding Area, Hist Files, location E–5–2, Winchester, Va.

[54]ESC, "USAEDE (EUD): Organization Study," p. 9.

[55]Interv, authors with Rodehaver, 31 Jan 90, p. 3.

[56]In general on this office, see "History of the Northern Area Engineer Office (1975–1988)," updated 1 Sep 88, typescript provided by the Northern Area Office.

[57]EUD General Order 1, 7 Jan 76, Action to Organize Mediterranean Area Office Effective 1 Feb 76, EUD-RHA, Misc Docs.

[58]Ltrs, Prentiss to Gribble, 11 May 1976, and Prentiss to Burnell, 21 June 1976, both in EUD-RHA, M–1–7.

[59]See Min of Staff Mtgs, 20 Apr, 4, 18 May, 7 Jun 76, EUD-RHA, M–1–9; "Annual Report of Major Activities, Office of the Chief of Engineers, 1 Jul. 1974–30 Jun. 1975," pp. 54–55, and "Annual Historical Review, 1 Jul. 1975–30 Sept. 1976," p. 37, both in Gen Files, Box 8, File 1, OH HQUSACE; "EUD in Perspective 1976–78," sections on "Current Design Programs: Iran" and "Construction Execution: Iran."

[60]"Med Area to Navy," *Corps' Line*, September 1980; "Memorandum of Agreement between the U.S. Army Corps of Engineers and the Naval Facilities Engineering Command," 26 Jan 80, Bouchereau Papers, OH HQUSACE; Interv, Baldwin with Camblor, pp. 80–82.

[61]The figures in Table 10 are for 1979 "Program Review and Analysis, 4th Quarter FY 1979," U.S. Army Engineer Division, Europe, EUD-RHA, Misc Docs, and for 1980 from "Program Review and Analysis, 4th Quarter FY 1980," U.S. Army Engr Div, Europe, EUD-RHA, Misc Docs.

[62]"Program Review and Analysis, 4th Quarter FY 1979," U.S. Army Engineer Division, Europe, EUD-RHA, Misc Docs.

[63]Interv, authors with Lt. Col. Grosvenor Fish, Jr., 11 Jun 90, Nuremberg, p. 12.

[64]Memo, Col. Robert Baldinger to all Members of EUD-NO [Northern Area Office], 4 Jan 88, sub: FY 87 Review–Northern Area, p. 1, provided by the Northern Area Office.

[65]"History of the Northern Area Engineer Office (1975–1988)"; Periodic Rpt, Ray to Heiberg, 27 Feb 86, EUD, RM, current files.

[66]Interv, authors with Ray, pp. 38–40.

[67]Ibid., pp. 32–37; EUD Engr Div, briefing item for Withers, 22 Sep 82, sub: FY 84 MCAF Airbase Upgrade, various locations, Turkey, EUD-RHA, Misc Docs; Interv, authors with Blake, 1, 6 Feb 90, Frankfurt, pp. 65–66.

[68]Ltrs, Heiberg to Gen. Otis, CINCUSAREUR, 20 December 1984, EUD-RHA, M-1-6, and Ray to Heiberg, 15 August 1986; Interv, authors with Ray, pp. 42–43; Interv, Baldwin and Walker with Camblor, pp. 80–81; Interv, William C. Baldwin and Paul Walker with Brig. Gen. James W. Ray, 22, 27 May 87, Frankfurt, pp. 82–84, Intervs at OH HQUSACE.

[69]"Greece Resident Office: Another Bad Day in Paradise," *Corps' Line*, February 1988. The programs involved in the 1980s, the Long Range Security Program (LRSP) and Weapons Access Denial System (WADS), are discussed in Chapter 10.

[70]Interv, authors with R. Grimm, pp. 9–10.

[71]Interv, authors with Hensley, pp. 18–19.

[72]Interv, authors with Veronica Rovero, 19 Jun 90, Incirlik, Turkey, pp. 16–17.

[73]Interv, authors with Cox, pp. 40–41.

[74]Interv, authors with Rovero, pp. 26–30.

Chapter 10

[1]The information for this and the following paragraph comes from Debriefing Rpt, Brig. Gen. James C. Donovan to CINC USAREUR and Seventh Army, 22 Aug 74, EUD-RHA, Misc Docs; Draft Fact Sheet, prepared by Lt. Col. [George] Miller for Prentiss' Signature, 31 Oct 74, EUD-RHA, M-1-7. The final version of the Fact Sheet is dated 1 November and is signed by Prentiss, EUD-RHA, Misc Files. See also Materials for Gribble Visit, "Fact Sheet: S&A MOUSF Funding," 17 Mar 75, and "Fact Sheet: Formation of EUD," 20 Mar 75, both in M-1-7; Ltr, Maj. Gen. F. P. Koisch, [USAREUR] Engineer, to Ministerialdirektor Schmunk, Abteilungsleiter U, Bundesmininsterium der Verteidigung, Bonn, 21 Jun 74, Misc Docs, all in EUD-RHA; and Fact Sheet, Office Engineering Branch, 13 Mar 75, "Supervision and Administration, MOUSF Funding," Bouchereau Papers, OH HQUSACE.

[2]Draft Fact Sheet prepared by Miller for Prentiss' signature, 31 Oct 74.

[3]"Personnel Requirements for the MOUSF Program," n.d., attached to material filed with MFR, Camblor, 17 Oct 74, sub: MOUSF, EUD-RHA, Misc Docs; DF, USAREUR Engineer [Maj. Gen. R. H. Groves] to Chief of Staff [USAREUR], 5 Mar 75, sub: MOUSF Construction Surveillance, Bouchereau Papers, OH HQUSACE.

[4]Annual Report, USAREUR, 1975, pp. 154–56.

[5]Compare Ltr, Prentiss to Gribble, 10 October 1974, to an incomplete draft marked "Lieutenant General William C. Gribble, Jr." Whole passages indicate that the latter is a preliminary draft of the letter for 10 October 1974. The dated letter is in EUD-RHA, M-1-12. See also Interv, Baldwin with Camblor, pp. 25, 66–67, 86.

[6]The quotation is from Ltr, Prentiss to Gribble, 17 January 1975, EUD-RHA, M-1-12; see also Ltr, Maj. Gen. William R. Kraft, Jr., to Div. Engr., 16 December 1974, ann. B to "Supplementary Agreement between the USAREUR Engineer and the Division Engineer, USA Engineer Division, Europe (EUD) on the Modernization of US Facilities (MOUSF)," signed by R. H. Groves and Louis W. Prentiss, Jr., 23 Jul 75, EUD-RHA, M-1-10.

[7]DF, MOUSF Construction Surveillance; "Supplementary Agreement between the USAREUR Engineer and the Division Engineer, EUD, on MOUSF," 23 Jul 75.

[8]Min of Staff Mtg, 21 Jan 76, EUD-RHA, M-1-9.

[9]Materials for Gribble Visit, Fact Sheet, Ofc Engr Br, 13 Mar 75, sub: Supervision and Administration, MOUSF Funding, Bouchereau Papers.

[10]Additional Remarks Keyed to Attachment to Fact Sheet, 23 Oct 74, sub: Duties of MOUSF Project Officers US FRG Construction Agencies, EUD-RHA, M-1-7.

[11]Ibid.

[12]Ibid.

[13]Untitled attachment to MFR by Camblor, 17 Oct 74, sub Conference—MOUSF Design Procedures, EUD-RHA, Misc Docs.

[14]Memo, Delbridge to CINC USAREUR, 7 Jan 77, sub: Mechanical Kitchen Equipment (MKE) MOUSF Renovation Projects, EUD-RHA, P–7–11.

[15]Annual Report, USAREUR, 1975, pp. 154–56; USAREUR AHR, 1976, p. 155.

[16]Memo, Maj. Gen. J. W. Morris, OCE, Deputy Chief of Engineers, to HQDA through Div Engr, Europe, 26 Sep 75, sub: Command Inspection, U.S. Army Engineer Division, Europe, 18–22 August 1975, p. 5, EUD-RHA, M–1–9.

[17]Ibid.

[18]Annual Report, USAREUR, 1975, pp. 154–56; USAREUR AHR, 1976, p. 155.

[19]USAREUR AHR, 1984, pp. 253–54.

[20]Typescript, "Brig. Gen. G. K. Withers to EUD Employees during March 1981," [Command Briefing], provided by Withers.

[21]MFR, Louis J. Tinnerello, 3 Jul 74, sub: FY–75 Physical Protection Program, VARLOC, Min from Mtg in Mainz on Aircraft Shelter Program Held 21 Jun 74, p. 1, EUD-RHA, Misc Docs (hereafter cited as MFR, 3 Jul 74, Mainz Mtg).

[22]Ibid.

[23]Ibid. See also Interv, authors with Louis Brettschneider, 12 Dec 91, Frankfurt, p. 32.

[24]MFR, 3 Jul 74, Mainz Mtg.

[25]Ltr, Prentiss to Gribble, 10 October 1974, EUD-RHA, M–1–12; Intervs, authors with Brig. Gen. James Donovan, 20 Nov 90, Arlington, Va., pp. 56–58, and with Maj. Gen. Louis Prentiss, Jr., 14 Sep 90, Indian Beach, Del., pp. 34–36.

[26]Intervs, authors with Prentiss, pp. 34–35, and with Ralph Wheeler, 12 Feb 91, Arlington, Va., pp. 11–16.

[27]See Memo, Camblor to Prentiss, 10 Dec 74, sub: Meeting with Brigadier General Cortenraad, Director of Works, Ministry of Defense, Netherlands, 1000–1200 hrs, 12 Dec 74, EUD-RHA, M–1–7.

[28]Interv, authors with Wheeler, p. 11–13; Ltr, Prentiss to Gribble, 17 January 1975, EUD-RHA, M–1–12; Memo, Camblor for Prentiss, 10 Dec 74; Materials for Gribble Visit, "Fact Sheet: Aircraft Shelter Project—Spangdahlem Air Base," 13 Mar 75, EUD-RHA, M–1–7.

[29]Ltr, Gribble to Prentiss, 18 February 1975, EUD-RHA, M–1–9; Min of Staff Mtg, 9 Sep 75, EUD-RHA, M–1–11.

[30]Materials for Gribble Visit, "Fact Sheet: Aircraft Shelter Project—Spangdahlem Air Base"; "Annual Report," [OCE], 1975, p. 41; MFR, Camblor, 12 Aug 75, sub: Netherlands-EUD Conference on Procedures for Execution of Gilze-Rijen and Soesterberg Aircraft Shelter Projects, Bouchereau Papers, OH HQUSACE; Min of Staff Mtg, 22 Oct 75, p. 2, EUD-RHA, M–1–11.

[31]Materials for Gribble Visit, "Fact Sheet: Aircraft Protective Facilities, Lahr Air Base, Germany," 20 Mar 75, EUD-RHA, M–1–7; Ltrs, Prentiss to Gribble, 18 April, 14 July 1975, EUD-RHA, M–1–12.

[32]Min of Staff Mtg, 22 Jul 75, EUD-RHA, M–1–11.

[33]Intervs, authors with Hasso Damm, 12 Dec 91, Frankfurt, p. 32; with Col. Roy Brown, 25 Aug 89, Hoensbroek, Netherlands, pp. 22–23, 32–36, 86–87; with Johann Kersbergen, 24 Aug 89, Soesterberg, Netherlands, pp. 2–4.

[34]Min of Staff Mtgs, 13, 21 Jan 75, and Msg, Brown to Col. N. Rhodes, sub: Contract no. DACA 90–75–c–0180, Airfield Shelters ..., both in EUD-RHA, M–1–9.

[35]For the progress of construction, see Min of Staff Mtgs, 18 May, 1 Jun 76, EUD-RHA, M–1–9; and "EUD Information Bulletin," August, November, and December 1976;

"History—Northern Area Office, EUD, May 1975–Aug. 1978" [Aug 78], p. 1, EUD-RHA, M–1–12; *EUD Bulletin*, March 1977.

[36]Intervs, authors with Brown, pp. 83–87; with Kersbergen, pp. 2–4; with Wheeler, pp. 11–16; with Prentiss, pp. 34–36.

[37]EUD Briefing for Command Inspection, 1977, p. 10, Bouchereau Papers.

[38]"Annual Historical Summary, Office of the Chief of Engineers, 1 Jul. 1970–30 Jun. 1971," p. 35, Gen Files, 6–5, OH HQUSACE; "Annual Report of Major Activities, Office of the Chief of Engineers, 1 Jul. 1974–30 Jun. 1975" (hereafter cited as Annual Report, OCE, 1975), p. 46, Gen Files, Box 8, File 1, OH HQUSACE.

[39]Fact Sheet, 20 Nov 75, sub: Transfer of Construction Responsibility South of the Alps, p. 2, EUD-RHA, Misc Docs.

[40]Min of Staff Mtg, 7 Jun 76, EUD-RHA, M–1–9.

[41]Min of Staff Mtgs, 7, 29 Jun 76, quotations from the latter, EUD-RHA, M–1–9.

[42]Ibid.; OCE AHR, 1976, pp. 8–9.

[43]Delbridge, Incomplete Draft for a Briefing Paper Prepared for Delivery after October 1977, (hereafter cited as Briefing, Delbridge, late 1977), p. 15, Bouchereau Papers, OH HQUSACE.

[44]See Europe Division, "EUD in Perspective, 1976–78," n.d., sections on "Current Design Programs: Navy," and "Construction Execution," EUD current files; "Engineers Build Up on Personnel," *Stars and Stripes*, European Edition, 13 Aug 78; "Maturing from Minor to Major," *Corps' Line*, February 1979; Ltr, Wilson to Lt. Gen. Morris, 27 June 1979, sub: Status of Projects, Gen Files, 59–3–1, OH HQUSACE.

[45]The figures used derive from two different sources that are not quite comparable but that overlap for just two fiscal years, 1980 and 1981. The figures used for the 1970s to 1981 come from Attachments to MFR, 16 Mar 81, sub: LTG J. K. Bratton Europe Visit, 1–12 Mar 81 (hereafter cited as Attachments, Bratton Visit). Attachments have no page numbers, but the figures on MCA dollars come from a chart on what would be page 397, Mil Files XIV–1–B2, OH HQUSACE. The figures for the 1980s come from USAREUR AHR, 1985 and 1986, p. 4.22.

[46]Engineer Studies Center, "U.S. Army Engineer Division, Europe (EUD): Organization Study," Apr 85, p. 2, EUD-RHA, M–1–8 (hereafter cited as ESC "USAEDE (EUD): Organization Study"); EUD Briefing, Delbridge, late 1977, p. 18; Attachments, Bratton Visit, p. 397.

[47]"Brig. Gen. G. K. Withers to EUD Employees during Mar. 1981."

[48]Nelson, *History of U.S. Military Forces in Germany*, p. 115.

[49]Information for this and the preceding paragraph is drawn from "Upgrade & Rehabilitation of Ammunition Storage Facilities (ASP's and PSP's)," 16 Oct 73, copy provided by Col. Claude Roberts; Brig. Gen. James C. Donovan, Cdr, USAENGCOMEUR, to Brig. Gen. Paul M. Timmerberg, PM, HQ USAREUR & 7A, 16 Nov 73, sub: Site Criteria, EUD-RHA, M–1–11; Annual Report, OCE, 1 Jul 73–30 Jun 74, pp. 32–33; Interv, authors with Carl E. Nelson, 12 Jun 90, Ansbach, pp. 43–46.

[50][Fact Sheet], 20 Mar 75, sub: Improvements for the Reaction to the Terrorist Threat to Nuclear Weapons (FY 76 MCA), EUD-RHA, M–1–7.

[51]Interv, authors with Maj. Gen. G. K. Withers, 12 Apr 91, Washington, D.C., pp. 1–2, 27–28. Withers commanded the brigade at that time.

[52]Nelson, *History of U.S. Military Forces in Germany*, pp. 167–71.

[53]On Pastore's provision of the report to the press and for general information, see Nelson, *History of U.S. Military Forces in Germany*, pp. 167–71; on USAREUR's earlier request to prefinance, see Record by John L. Shadday, EUD, Chief, Army Section, of a telephone call made to Lt. Col. Focht, OCE, sub: FY 76 MCA Project Security Improvements, SAS Sites, 31 Oct 74, and Memo, William E. Camblor to Chief, Engineer Division, 6 Dec 74, sub: FY

76 MCA Project, Security Improvement, SAS Sites—Coordination and Approval through German and Other Host Nation Agencies, both in EUD-RHA, Misc Docs.

[54]The figures on nuclear weapons are from Nelson, *History of U.S. Military Forces in Germany*, p. 164; for information on OCE's support, see OCE AHR, 1976, pp. 8–9, Gen Files, Box 8, File 4, OH HQUSACE.

[55]OCE AHR, 1976; [Fact Sheet], sub: Improvements for the Reaction to the Terrorist Threat to Nuclear Weapons (FY 76 MCA).

[56]Ltrs, Prentiss to Gribble, 17 January 1975, and Gribble to Prentiss, 18 February 1975, EUD-RHA, M–1–12 and M–1–9, respectively.

[57]Ltr, Prentiss to Gribble, 18 April 1975, EUD-RHA, M–1–12.

[58]For Prentiss' request that the staff find terms to differentiate, see Min of Staff Mtg, 29 Jul 75, EUD-RHA, M–1–11; the imprecise use of terms emerges from looking at an array of documents for the period.

[59]"EUD in Perspective, 1976–78," see page headed "LRSP" in section "Current Design Programs" and page headed "EUD Construction Execution, May 76 to Aug. 78, MCA Program Execution," for the comparison of terms and amounts. In a letter to Lt. Gen. John W. Morris, 26 January 1977, General Prentiss, by then DCSENG in Heidelberg, gives slightly different numbers and a slightly different timetable.

[60]"EUD in Perspective, 1976–78," page headed "LRSP"; Briefing, Delbridge, late 1977, p. 13; Delbridge Briefing, marked in longhand "Sept. 78 revised briefing," with longhand additions, p. 10, provided by Delbridge.

[61]Information Paper, sub: Long Range Security Program, 29 Sep 82, tab 16, Briefing Book, Europe Trip, Maj. Gen. Ames S. Albro, Jr., Mil Files XIV–1–8a, OH HQUSACE.

[62]"Report of Lessons Learned as Related to Design and Construction in EUD," Oct 78, pp. 5–11, EUD-RHA, Misc Docs; Interv, authors with Wayne Lewis, 4 Jun 90, Kaiserslautern, p. 9.

[63]Interv, authors with Jose Cruz, 19 Nov 91, Hurst, Tex., pp. 70–73.

[64]Wilson's comments are from Interv, authors with Maj. Gen. Drake Wilson, 29 Oct 90, Alexandria, Va., pp. 51–54; see also Min of Staff Mtg, 15 Jan 79, EUD-RHA, M–1–12; Cruz's comment is from his interview with authors, 19 November 1991, p. 70.

[65]For the information and the comment concerning the Dutch reaction, see Min of Staff Mtg, 3 Apr 79, EUD-RHA, M–1–12.

[66]Min of Staff Mtg, 5 Feb 79, EUD-RHA, M–1–12.

[67]Ltr, Wilson to Morris, 27 June 1979, Gen Files, Box 59–3–1, OH HQUSACE; Ltr, Withers to Bratton, 28 Jan 81, p. 3, EUD-RHA, M–2–1; Attachments, Bratton Visit, 16 Mar 81, n.p. [p. 407], Mil Files XIV–1–32, OH HQUSACE. General Crizer's name is Pat, not Patrick.

[68]Interv, authors with Col. Daniel Waldo, Jr., 31 Aug 89, Frankfurt, pp. 6–7; "Brig. Gen. G. K. Withers to EUD Employees during March 1981," p. 2, EUD-RHA, Misc Docs; Attachments, Bratton Visit, 16 Mar 81, chart, [p. 432].

[69]Attachments, Bratton Visit, 16 Mar 81.

[70]Nelson, *History of U.S. Military Forces in Germany*, p. 185; Interv, authors with Wise, 1 Feb 90; "Project Data and Justification—NATO Common Funded Infrastructure," n.d. [1983?], p. 2, EUD-RHA, M–1–10.

[71]Ltr, Withers to Bratton, 3 May 1982, EUD-RHA, M–2–1; "Project Data and Justification—NATO Common Funded Infrastructure."

[72]Interv, authors with Wise, 1 Feb 90, pp. 17–21; "Project Data and Justification—NATO Common Funded Infrastructure."

[73]For the first quotation, see Interv, authors with Wise, 1 Feb 90, pp. 17–21; for the second, see Interv, authors with John Blake, 1, 6 Feb 90, Frankfurt, pp. 22–23.

[74]Interv, authors with Maj. Gen. James W. van Loben Sels, 12 Apr 91, Fort Monroe, Va., pp. 52–54.

[75]Interv, authors with Blake, 1, 6 Feb 90, p. 22.

[76]"Project Highlights in Kaiserslautern," *Corps' Line*, August 1990.

[77]"Brig. Gen. G. K. Withers to EUD Employees during March 1981"; see also "REFORGER," *Military Engineer* 67 (January/February 1975): 28, and "Airlift Is Key to Commuter Army," *Military Engineer* 68 (July/August 1976): 308.

[78]Ibid., and Interv, Hendricks with Cooper, pp. 9–10.

[79]"Providing Quick-Reaction in Crisis," *Corps' Line*, February 1979; "Engineers, Designers, Diplomats," in *Engineer Update*, July 1979; Ltr, Wilson to Morris, 27 June 1979, Gen Files, Box 59–3–1, OH HQUSACE.

[80]Nelson, *History of U.S. Military Forces in Germany*, pp. 171–80; the MCA figures for FY 1978 are from USAREUR AHRs, 1977, pp. 172–76, and 1978, pp. 158–60, quotation from p. 159, both at CMH.

[81]Headquarters, U.S. Army Europe and Seventh Army, "Historical Review, Calendar Years 1979–1980," p. 303, CMH; Attachments, Bratton Visit, table listing "NATO Supported Systems in EUD," 16 Mar 81, [p. 430].

[82]"Brig. Gen. G. K. Withers to EUD Employees during March 1981."

[83]*Berger World* 11, no. 2 (June 1981): [6], periodical brochure without page numbers printed by Louis Berger International, Inc., one of the contractors on POMCUS construction.

[84]Ibid.

[85]Interv, authors with Arthur Textor, 1 Feb 90, Frankfurt, pp. 14–16; "Prepositioned Materials Kept in Readiness for Time of Need," *Corps' Line*, September 1989.

[86]*Berger World* 11, no. 2 (June 1981): [6].

[87]Interv, authors with Textor, pp. 14–16, describes the process of preparing equipment for storage. For descriptions of the sites, see "Prepositioned Materiel Storage Sites Strengthen NATO Defense Capability," *Corps' Line*, May 1986.

[88]"Prepositioned Materiel Storage Sites Strengthen NATO Defense Capability."

[89]Ibid.; "Prepositioned Materials Kept in Readiness for Time of Need."

[90]"Prepositioned Materiel Storage Sites Strengthen NATO Defense Capability."

[91]For the 1987 figures, see "Northern Area Briefing, as of 1 Aug. 1989," p. 23, Northern Area Office Files.

Chapter 11

[1]Nelson, *History of U.S. Military Forces in Germany*, pp. 78–82, 88, 98, 147–51.

[2]Ibid.

[3]HQ, USAREUR, *Strengthening NATO: Stationing of the 2nd Armored Division (Forward) in Northern Germany*, May 1980. On the early discussions and deployment of Brigades 75 and 76, see pp. 1–7.

[4]Ibid., p. 7; Nelson, *History of U.S. Military Forces in Germany*, p. 156.

[5]HQ, USAREUR, *Strengthening NATO*, p. 7.

[6]Ltr, Prentiss to Gribble, 10 October 1975, Box M–1–12; Min of EUD Staff Mtgs, 22 Oct, 18 Nov 75, Box M–1–11; Ltr, Gribble to Prentiss, 8 December 1975, Box M–1–12. All in EUD-RHA.

[7]Min of EUD Staff Mtgs, 21 Jan, 20 Apr 76, EUD-RHA, Box M–1–9.

[8]Min of EUD Staff Mtg, 27 Apr 76, EUD-RHA, Box M–1–9.

[9]See HQ, USAREUR, *Strengthening NATO*, passim, and Nelson, *History of U.S. Military Forces in Germany*, pp. 151–61.

[10]The quotation is from HQ, USAREUR, *Strengthening NATO*, p. 53; on the bid openings, see "Construction News," in "EUD Information Bulletin," 1 Nov 76, p. 7.

[11]HQ, USAREUR, *Strengthening NATO*, pp. 12–13, 54–56.

[12]Ibid., pp. 11, 15, 23, 54.

[13]Ibid., pp. 23, 55–56.

[14]Ibid., pp. 15, 27; Nelson, *History of U.S. Military Forces in Germany*, p. 160; Interv, authors with Prentiss, pp. 65–68.

[15]HQ, USAREUR, *Strengthening NATO*, pp. 15, 27; Interv, authors with Prentiss, pp. 65–68.

[16]HQ, USAREUR, *Strengthening NATO*, pp. 15, 27, 28.

[17]Ibid.

[18]Ibid., pp. 15–17, 23–24; Europe Division, "EUD in Perspective, 1976–78," n.d., see sec. "Construction Execution" for a description of NORTHAG construction, EUD current files; *Corps' Line*, August 1978, p. 5.

[19]HQ, USAREUR, *Strengthening NATO*, pp. 15–17, 23–24, 30, 42; *Corps' Line*, August 1978, p. 5. The figures for the value of the dollar are from "Dollar Dip Means Slight Allowance Increase," *Corps' Line*, January 1988, which published a chart covering 1976–1987.

[20]HQ, USAREUR, *Strengthening NATO*, pp. 15–17.

[21]Ibid., p. 30.

[22]Ibid., p. 33.

[23]Ltr, Delbridge to Director of Military Construction, OCE, 4 November 1977, EUD-RHA, Box M–1–9.

[24]"Maturing from Minor to Major," *Corps' Line*, February 1979; HQ, USAREUR, *Strengthening NATO*, pp. 17, 58.

[25]Nelson, *History of U.S. Military Forces in Germany*, pp. 147–48, 171–76, 178–87; see also William C. Baldwin, *The Engineer Studies Center and Army Analysis: A History of the U.S. Army Engineer Studies Center, 1943–1982* (Washington, D.C.: Government Printing Office, 1985), pp. 256–57.

[26]"Building a City from the Ground Up: Vilseck To Get 5 New Battalions," *Corps' Line*, March 1989.

[27]Ibid.; Brig. Gen. James W. Ray, "Commentary: 'The Path to Excellence Is Through Our People,'" *Corps' Line*, December 1986; Ltr, Harrell to Lt. Gen. Henry J. Hatch, 7 August 1989, EUD, RM, current files; "Vilseck Force Modernization Program," 14 Apr 88 [briefing outline], EUD-RHA, current files.

[28]"Building a City from the Ground Up."

[29]Ibid.

[30]Quotations from Interv, authors with Lt. Col. Grosvenor W. Fish, 6 Dec 91, Nuremberg, pp. 10–11; see also "Building a City from the Ground Up."

[31]"Building a City from the Ground Up"; Weekly Staff Mtg Notes, Week Ending 7 Jul 89, EUD, RM, current files.

[32]Quotations from Intervs, authors with John Blake, 1, 6 Feb 90, Frankfurt, pp. 77–80, and with Douglas Sommer, 11 Jun 90, Vilseck, pp. 18–19.

[33]Interv, authors with Withers, pp. 5–6, 24–25.

[34]Ibid.; see also Ltr, Withers to Bratton, 20 Jan 82, p. 3, in which he alludes to the same incident, EUD-RHA, Box M–2–1.

[35]For this and the preceding paragraph, see Interv, authors with van Loben Sels, pp. 16–22, 25–27; "Engineer Task Force Range Upgrade Program, After Action Report, 3 Jan 83," cover letter signed by Williams, Mil Files XIV–1–9, OH HQUSACE; see also Interv, authors with Smith, pp. 53–56; *Berger World* 11, no. 2 (June 1981): [4–5].

[36]*Berger World* 11, no. 2 (June 1981): [4–5]; Attachments, Bratton Visit, table listing "NATO Supported Systems in EUD," 16 Mar 81, [p. 434]; "Engineer Task Force Range Upgrade Program, After Action Report, 3 Jan 83," pp. 9–10.

[37]"Engineer Task Force Range Upgrade Program, After Action Report, 3 Jan 83," p. 10.

[38]Ibid., p. 11; "Graf '82 Project Going Strong," *Corps' Line*, August 1982; Ltr, Withers to Bratton, 20 January 1982, EUD-RHA, Box M–2–1.

[39]E. R. Heiberg III, "Engineer Missions Support the Total Army," *Military Engineer* 77 (January/February 1985): 7; "Engineer Task Force Range Upgrade Program, After Action Report, 3 Jan 83," p. 2–3.

[40]"Engineer Task Force Range Upgrade Program, After Action Report, 3 Jan 83," p. 2; Intervs, authors with Smith, pp. 53–56, and with van Loben Sels, pp. 16–22; *Berger World* 11, no. 2 (June 1981): [4–5]; George B. Fink, Jr., "Learning by Building 'The Movers,'" *Military Engineer* 73 (September/October, 1981): 340–42.

[41]The quotation and description come from Interv, authors with Smith, pp. 53–56.

[42]Ltr, Smith to Maj. Gen. Richard M. Wells, 19 February 1984, pp. 4–5, Civil Works Files I–20–1, OH HQUSACE; *Berger World* 11, no. 2 (June 1981): [3].

[43]*Berger World* 11, no. 2 (June 1981): [3–5].

[44]"Officials Conduct Testing at Grafenwoehr Prototype Range," *Corps' Line*, January 1988.

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Chapter 12

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Chapter 13

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[64]Quotation from Interv, authors with Harrell, 30 Jan 92, pp. 28–29, 15–17.

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[67]Intervs, authors with Minton, pp. 72–75; with Higgs, 6 Jan 92, pp. 40–44; with Robert Rodehaver, 10 Dec 91, Frankfurt, p. 2; with Moravec, 18 Nov 91, p. 4; with Wise, 11 Dec 91, pp. 21–23; with Waldo, 4 Dec 91, pp. 2–3; with Harrell, 30 Jan 92, pp. 19–21.

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[87]Interv, authors with Harrell, 30 Jan 90, pp. 8–12.

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[122]Interv, authors with Conway, pp. 67–68.

[123]Interv, authors with Love, pp. 14–16, 28–29.

[124]Interv, authors with Brettschneider, 12 Dec 91, pp. 19–20.

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[127]Interv, authors with Minton, pp. 93–96.

[128]"Commander's Comments: Final Chapter on Division No End to Mission," *Corps' Line*, February 1991.

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Epilogue

[1]The $5 billion figure does not reflect the changing value of the dollar over those forty-five years. Money spent in the 1940s must be multiplied by a rough factor of 6.25, in the 1950s by 5.5, in the 1960s by 4.5, in the 1970s by 3, and in the 1980s by 1.5, to reflect the value (buying power) of the dollar in 1994.

[2]Interv, Paul K. Walker with Allan B. Aaron, Jun 88, Frankfurt, Germany, pp. 138–41.

[3]"Briefing by Director, USACAG," 13 Oct 61, for visit by Lt. Gen. Walter K. Wilson, Jr., to USAREUR, 9–22 Oct 61, Mil Files XII–43–1, OH HQUSACE. For similar reflections, see Ltr, Prentiss to Gribble, 11 May 1976, EUD-RHA, Box M–1–7; Interv, authors with Harrell, 30 Aug 89, pp. 29–30.

[4]Interv, authors with Butschan, pp. 2, 7.

[5]Interv, authors with Hartwig Braun, 5 Jun 90, Kaiserslautern, pp. 36–37.

[6]"Dedication Marks Corps Contributions," *Corps' Line*, December 1990.

ACRONYMS

AAA	Army Audit Agency
AAFES	Army and Air Force Exchange Service
AAF	Army Air Forces
ABG	*Auftragsbautengrundsätze*
ADA	Automated data processing
AMPRS	Automated Management Progress Reporting System
ATC	Air Transport Command
ATS	Austrian shilling
ADSEC	Advance Section (COMZ)
BOQ	Bachelor officers' quarters
CINC	Commander in chief
COEMIS	Corps of Engineers Management Information System
COMZ	Communications Zone
CPO	Civilian Personnel Office
DAC	Department of the Army civilian
DBBV	*Deutsche Bundesbauverwaltung*
DCSENG	Deputy Chief of Staff, Engineer
DEH	Directorate of Engineering and Housing
DIN	*Deutsche Industrie-Normen*
DM	Deutschmark
EEO	Equal employment opportunity
ENGCOM	Engineer Command
EQM	EUD Quality Management
ESC	Engineer Studies Center
ETOUSA	European Theater of Operations, United States Army
EUCOM	European Command
EUD	Europe Division
GLCM	Ground Launched Cruise Missile
JAMMAT	Joint American Military Mission for Aid to Turkey
LRSP	Long Range Security Program
MCA	Military Construction, Army
MCAF	Military Construction, Air Force

MCN	Military Construction, Navy
MEAPO	Middle East/Africa Projects Office
MOUSF	Modernization of U.S. Facilities
MOUT	Military operations in urban terrain
MRI	Maintenance, Repair, and Improvement
NATO	North Atlantic Treaty Organization
OCE	Office of the Chief of Engineers
OMA	Operations and Maintenance, Army
OMGUS	Office of Military Government United States
POL	Petroleum, oil, and lubricants
POMCUS	Pre-positioned Organizational Materiel Configured to Unit Sets
POMSS	Pre-positioned Organizational Materiel Storage Site
PW	Prisoner of war
RIF	Reduction in force
SAS	Special Ammunition Storage
SETAF	Southern European Task Force
SHAEF	Supreme Headquarters, Allied Expeditionary Force
TAB VEE	Theater Air Base Vulnerability Evaluation Exercise
TQM	Total Quality Management
TSFET	Theater Services Forces, European Theater
TUSEG	The United States Engineer Group
UEPH	Unaccompanied enlisted personnel housing
USACAF	United States Construction Agency, France
USACAG	United States Army Construction Agency, Germany
USACE	United States Army Corps of Engineers
USAEDE	United States Army Engineer Division, Europe
USAFE	United States Air Forces in Europe
USAREUR	United States Army, Europe
USEUCOM	United States European Command
USFA	United States Forces, Austria
USFET	United States Forces, European Theater

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Archival Materials

Most of the historical evidence for the study of the Europe Division and its predecessors comes from primary documentation contained in archival and records repositories in the United States and Europe. These repositories are listed below with a description of their relevant holdings. Descriptions relate to the repositories as they existed during the period of intensive research, 1988 to 1991. As noted, some archives have been reorganized, moved, or closed.

Records Holding Area, Europe Division (EUD-RHA), Frankfurt/Bonames, Germany

The records holding area that held EUD's documents contained about 2,000 records center boxes in 1988. In 1991 the records holding area closed and the records were moved. A survey and a preliminary finding aid prepared by James R. Arnold and Roberta Weiner, "Inventory of Records Materials Pertaining to the Europe Division and Predecessor Agencies" (available from the Office of History, Headquarters, U.S. Army Corps of Engineers), permitted the authors of this study to focus on the boxes that appeared most relevant to the historical narrative.

National Archives (NA), Washington, D.C.

The archival holdings relating to the operations of the U.S. Army in Europe contained in the collections of the National Archives are voluminous. The material from the National Archives concentrated particularly on the period from the end of World War II to the formation of the Engineer Command (1967), years poorly documented in the records in Frankfurt/Bonames. When consulted, these documents were at Suitland, Maryland. They have since been moved to the National Archives at College Park, Maryland, and reorganized. The major holdings consulted included:

Record Group (RG) 332, Records of U.S. Theaters of War, World War II: European Theater of Operations

- Records of the Historical Division, Administrative Historical Reports, 1942–January 1946
- Engineering Section, Circulars, Bulletins and Reports, 1943–1945
- Engineering Section, Operations and Project Reports, 1945

RG 338, Records of United States Army Commands, 1942– : European Command (EUCOM)

- Engineer Division
- Historical Division, Program Files Engineer Division, Reports, Letters, Bulletins 1947–1950

RG 338, Records of United States Army Commands 1942– : U.S. Forces, European Theater (USFET)

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Office of History, Headquarters, U.S. Army Corps of Engineers (OH HQUSACE), Alexandria, Va.

The Office of History, located in Alexandria, Virginia, maintains research facilities to support the work of its staff historians. It has a rich supply of documentary material and historical papers prepared by Army historians for limited circulation (so-called gray literature) that bears upon the history of the Army engineers in Europe during and since World War II. These materials can be found in the following research collections:

General Files
Civil Works Files
Military Files

In addition, the personal papers of Lt. Gen. Samuel D. Sturgis, Jr., Chief of Engineers from 1953 to 1956, were particularly useful on construction in France and regarding the creation of the Joint Construction Agency in the early 1950s. Materials from the papers of Lt. Gen. Walter K. Wilson, Jr., Chief of Engineers from 1961 to 1965, and from General Bruce C. Clarke, Commander in Chief, U.S. Army, Europe, from 1960 to 1962, also proved helpful.

The Office of History also has an extensive oral history collection that contains many interviews relevant to this project. The interviews used are listed in the Oral Histories section of this bibliography.

Office of History, Headquarters, U.S. Army Europe (USAREUR), Heidelberg, Germany

The office has a limited amount of unclassified information and a wealth of reports and gray literature that provide background and context for the work of the Army engineers in Europe. Especially valuable are many of the studies completed in the 1940s, 1950s, and 1960s by staff historians.

U.S. Army Center of Military History (CMH), Washington, D.C.

The Center of Military History holds staff reports and historical studies similar to those held in the Office of History, USAREUR, and the collections complement one another. CMH also has annual reports and the detailed multivolume histories of the occupation prepared by the European Command's Historical Division. They are listed by year below in the Governmental Historical and Staff Studies section.

Star and Stripes *Library, Darmstadt, Germany*

In addition to its own back files of the European Edition of the *Stars and Stripes* newspaper that serves the local American military community, the *Stars and Stripes* Library has materials in its collection that may exist nowhere else in accessible form.

Other

Several repositories provided valuable primary documentation and information.

- Generallandesarchiv, Karlsruhe, Germany: The Generallandesarchiv responded to an inquiry made of local German archives by providing the documentary information on the death and commemoration of Private Roy L. Mattson mentioned in Chapter 3.
- Engineering Society Library, New York, N.Y.: This facility closed in the mid-1990s.
- Northern Area Office, Europe Division, Hoensbroek, Netherlands
- TUSEG Area Office, Europe Division, Incirlik, Turkey

In addition, several individuals interviewed for this study provided documents that they held personally.

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