
The U.S. Army Air Forces in World War II

Leaping the Atlantic Wall

Army Air Forces Campaigns in
Western Europe, 1942–1945

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On December 7, 1941, the Japanese empire attacked the U.S. military installations in Hawaii. Four days later, Germany's dictator, Adolf Hitler, fulfilling a treaty with Japan, declared war on the United States. Having sealed with that act the developing alliance between the United States and Great Britain, Hitler's Third Reich speeded construction of a formidable "Atlantic wall," to protect the exposed beaches of the Netherlands, Belgium, and northern France. This rampart was a massive system of fortifications, obstacles, and warning centers intended to thwart an Anglo-American invasion of Nazi-occupied western Europe. Breaching the Atlantic wall of Hitler's "Fortress Europe" was the major strategic problem confronting British and U.S. military planners in late 1941. The two Allies based their offensive strategy on the belief that Germany was the strongest of the Axis powers and therefore should be defeated first. An air offensive against Germany was an important component of this strategy. Properly conducted, it would enable the Allies to leap the Atlantic wall and damage the industrial foundations of the Third Reich well before Allied ground troops penetrated the coastal barrier. The Allies held the air forces in the Pacific and Far East to a minimum and concentrated on building a formidable force on English soil capable of striking the Nazi heartland and, eventually, of supporting a cross-channel invasion and a victorious Allied advance across Europe.

Bombing Behind Enemy Lines

At the outbreak of the Second World War, the United States Army Air Forces (AAF) already possessed a broad strategic plan, designated AWPD-1, for an aerial offensive against Germany. Prepared by the Air War Plans Division in July 1941 at the request of President Franklin D. Roosevelt, the plan's first priority was to attain air superiority by destroying the German aircraft industry and operational fighters. The second priority was to destroy the German electrical power grid, transportation network, and oil industry. When these objectives were accomplished, the AAF would provide direct tactical support for the ground invasion of Europe.

The story of the AAF in Europe is largely one of the struggle to successfully apply the broad precepts of AWPD-1 to operational realities. The Americans first constructed a logistical infrastructure in England to sustain the strategic bombardment of occupied Europe and Germany. The AAF and the Royal Air Force (RAF) then launched a combined bomber offensive, striking the enemy day and night. By the spring of 1944, the AAF had accumulated enough heavy bombers and long-range escorts to achieve air superiority. With the invasion of Normandy imminent, the air arm turned its attention to the tactical support of ground forces breaching the Atlantic wall. With Fortress Europe's westernmost barrier penetrated, the AAF continued to bombard Germany's few remaining strategic targets and to support Allied ground troops until the surrender of Nazi Germany in April 1945.

The AAF began to implement AWPD-1 as soon as the United States entered the war in December 1941. Almost immediately, Allied military leaders started to amass forces in the United Kingdom, with an eventual goal of invading Nazi-occupied Europe. As part of the buildup known as Bolero, the War Department ordered the Eighth Air Force to the United Kingdom. Comprising the VIII Bomber Command, the VIII Fighter Command, the VIII Air Support Command, and the VIII Service Command, the Eighth Air Force was dedicated from its establishment to the strategic bombardment of Germany.

As the American air units began to arrive in Britain, RAF and AAF leaders disputed the proper role of heavy bombers. The Americans wanted to conduct daylight precision bombing. The RAF leaders pointed out that they had flown daylight missions early in the war, but switched to night missions to curtail heavy losses. Based on their experience, the British were confident that nighttime area bombing was the most effective way to employ heavy bombers and invited the AAF to join them in their effort.

Maj. Gen. Carl A. Spaatz, commander of the Eighth Air Force, and Brig. Gen. Ira C. Eaker, commander of the VIII Bomber Command, disagreed vehemently with the British. They argued that the only way to achieve air superiority over Europe was to force the Luftwaffe to fight in the daytime. After the Luftwaffe had been defeated, the heavy bombers

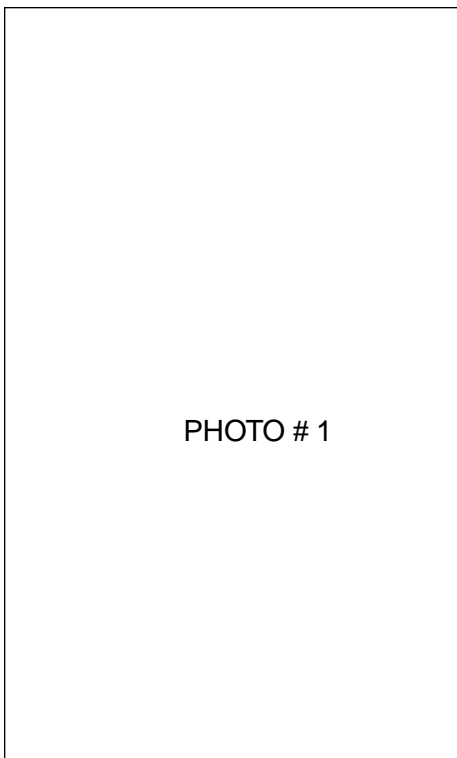


PHOTO # 1

**Lt. Gen. Carl A. Spaatz, standing
foreground, and Gen. Henry “Hap”
Arnold, seated.**

could cripple the enemy by destroying the electrical power network, petroleum industry, and other strategic targets listed in AWPDP-1. At this point, Spaatz was confident that strategic bombardment could defeat the Germans without an invasion, but first the United States had to demonstrate that American airmen could carry out accurate, daylight bombing missions without heavy losses.

Early Strategic Missions

American daylight raids began on August 17, 1942, with the VIII Bomber Command’s successful mission against the railroad marshaling yards at Rouen-Sotteville, France. Twelve B-17s, heavily escorted by RAF Spitfires, accurately bombed the yards and returned without losses. The heavy bombers and their escorts flew eight more successful missions before suffering

their first combat loss. Excited by the success of the first nine missions, Spaatz and Eaker optimistically reported to Gen. Henry H. Arnold, the AAF commanding general, that daylight bombing missions were feasible. Shallow penetration raids into France continued while the Eighth Air Force slowly acquired new bomb groups and began building its strength.

By mid-1942, German U-boats operating out of French ports were decimating Allied convoys in the North Atlantic. In October, the Allied commander-in-chief, Gen. Dwight D. Eisenhower, hoping to reduce the number of U-boats at sea and to disrupt their refitting operations, directed the Eighth Air Force to give the destruction of the submarine facilities top priority. These raids were not part of the strategic offensive, but they provided U.S. aircrews with valuable experience in daylight operations. The AAF, however, inflicted little damage on the solidly constructed U-boat pens, and German submarines continued to operate from French ports until the Allied ground forces drove them out in the fall of 1944.

Allied plans to invade North Africa in November 1942 also delayed the American strategic bombing campaign. Known as Operation Torch, this invasion resulted in the postponement of the planned cross-channel attack from Britain and the diversion of U.S. air units to North Africa. Those AAF units left in Britain spent the remainder of 1942 bombing the U-boat pens, German airdromes, and, as a third priority, transportation facilities in the occupied territories. But the day for the bomber offensive was on the horizon.

Birth of the Combined Bomber Offensive

In January 1943, Roosevelt, British prime minister Winston S. Churchill, and the Combined Chiefs of Staff met at Casablanca, French Morocco, to assess progress and define the war strategy for 1943 and beyond. Of the many decisions they made there, one of the most important was to carry on a combined bomber offensive against Germany and occupied Europe. Affirming the assignment of daylight raids to the Americans and night raids to the British, the conferees encouraged the AAF and RAF forces to conduct around-the-clock bombing.

Although the combined bomber offensive did not begin until June 10, 1943, the U.S. forces were not idle. Between January and June, Eighth Air Force bombers extended their efforts into Germany proper, bombing U-boat



PHOTO # 2

The Combined Chiefs of Staff conferred with Winston Churchill, *seated third from left*, prime minister of Great Britain, and President Franklin Roosevelt, *seated fourth from left*, at Roosevelt's villa in Casablanca, French Morocco, in January 1943.

facilities, testing the quality of the German opposition, and adjusting tactics and techniques.

During this period the Eighth Air Force faced a major problem—a shortage of combat aircraft. Not until March could the Eighth consistently put more than 100 bombers into the air. Finally, at the end of May, the United States dispatched a record force of 279 bombers against enemy targets. Also, until the beginning of April, the 4th Fighter Group, flying P-47s, was the only U.S. fighter outfit available to escort the bomber formations. In April, two more P-47 groups became operational and began escorting bombers on a regular basis.

By June, the Eighth Air Force had gradually increased its strength. Realizing the futility of bombing submarine pens, the Americans turned their attention to the Luftwaffe and the Axis rail transportation system. AAF heavy bombers attacked the Erla aircraft and engine works at Antwerp and the Focke-Wulf factory at Bremen. They also bombed rail marshaling yards at Hamm, Rennes, and Rouen.

The German reaction to the U.S. attacks varied. Early in 1943, enemy fighter strength dropped because of urgent demands from the eastern and Mediterranean fronts. But by midyear, in response to Eighth Air Force missions into northwestern Germany, the Luftwaffe increased the number of fighters on the western front from 350 to almost 600.

Both sides experimented with tactics. The United States had developed the combat wing formation, which consisted of three combat boxes of eighteen to twenty-one aircraft each. Although the Eighth Air Force experienced problems with this formation, it was able by April to fly a fifty-four-plane formation in such a way that any German fighter approaching from the front would meet a wall of machine gun fire. This formation was strong but not invulnerable. It was unwieldy and difficult to maintain. The upper and lower squadrons were still the most exposed, and enemy fighters concentrated on them. Thus the experimentation continued.

The Germans also were innovative and infinitely versatile in developing tactics for coordinated fighter attacks against U.S. bomber formations. They tried twin-engine fighters in the hope that the heavier firepower would be more effective. They used parachute mines and, by May, routinely dropped bombs on U.S. bomber formations. These last two tactics, although frightening, failed to destroy many aircraft or stop the bomber formations. The Germans increased the effectiveness of some of their fighters by adding to their armament and armor. They left the Me 109 roughly equivalent to the U.S. P-47 and they added armament to the FW 190 to make it more effective against the Allies' heavy bombers.

As the Luftwaffe fighter defense became more dangerous, most U.S. air power leaders acknowledged the need for a long-range fighter escort. VIII Bomber Command, however, clung to the belief that the self-defending bomber needed no escort. Nevertheless, in June, Arnold gave Maj. Gen. Barney Giles, the chief of the Air Staff, six months to develop a fighter that



PHOTO # 3

Despite severe damage to their ball-bearing plant at Schweinfurt, Germany, the Germans salvaged machinery and attempted reconstruction. A concrete mixer used for pouring new foundations can be seen at the extreme right.

could protect the bombers all the way from the United Kingdom to Germany and back. Meanwhile, the bombers continued to fly missions, and the losses mounted.

Early in August, the Eighth Air Force finalized plans for its largest mission to date. The targets were the ball-bearing plants at Schweinfurt and the Messerschmitt aircraft plants at Regensburg. By attacking these two critical industrial sites, the United States hoped to slow or even stop German aircraft production and thus help to achieve air superiority. The plan called for two waves of heavy bombers spaced a few minutes apart. The first wave would bomb Regensburg and fly on to North Africa, misleading the German fighter pilots who would expect the Americans to return to England. The second wave would attack Schweinfurt while the German fighters were on the ground refueling, thus achieving surprise and lowering U.S. losses.

On August 17, the Eighth Air Force launched more than 300 bombers in two waves. The first wave took off on schedule, but fog delayed the second wave's takeoff, destroying any chance for surprise. After the short-

range Allied fighter escort turned back, the Luftwaffe rose to meet both waves of U.S. bombers, and a tremendous air battle ensued. For more than six hours, the German fighters slashed at the American bombers with machine guns, cannons, mortar rockets, and even bombs. Attacking en masse, they hit the bomber formations head-on. As the German fighters exhausted their fuel and ammunition, they landed and a fresh unit from the next base took off.

The U.S. losses were devastating. The Germans shot down 60 bombers and damaged approximately 130 others. A navigator in the second wave, wondering why so many haystacks were burning below, discovered that they were B-17s shot down by the enemy. Despite these losses, the Americans did a good job. At Regensburg, they covered the entire area with high explosives and incendiary bombs, damaging almost every important structure in the plant and destroying many finished single-engine fighters on the flight line. Schweinfurt suffered eighty high-explosive hits on the two main ball-bearing plants. As a result, their production decreased from 140 tons in July to a low of 50 tons in September. Perhaps even more important, the raid prodded the Germans to disperse the ball-bearing and aircraft industries, thus reducing their potential aircraft production by 50 percent. However, the cost to the Eighth Air Force was so great that the mission could only be considered a Pyrrhic victory.

For the next few weeks, the Eighth Air Force resumed the easier task of bombing airfields and aircraft factories in France, Belgium, and Holland. With fighter escort, the loss rate for the bombers dropped to barely 4 percent.

Then, on September 6, the Eighth Air Force raided Stuttgart, another target beyond fighter escort. Forty-five bombers and aircrews were lost. The next day, the Eighth dispatched 185 bombers, under heavy escort, to

**Smoke rises
from exploding
bombs that
have hit their
targets on a
German
airfield in
France.**

PHOTO # 4

PHOTO # 5

Allied bomb damage in Bremen, Germany, came at a high cost to American bombers.

attack aircraft facilities in Belgium and Holland and the rocket site at Watten in France. Perhaps because of the excellent fighter escort, there was not a single loss.

As the weather cleared over Europe in early October, the American bombers returned in force. Within seven days, they flew four major missions against targets deep in Germany—Bremen, Anklam/Marienburg, Münster, and finally, on October 14, Schweinfurt. Once again at Schweinfurt the Eighth Air Force took a pounding. As soon as the P-47 escorts turned back, the Luftwaffe struck. Wave after wave of fighters attacked. First, the single-engine fighters flew in, firing machine guns and cannons. They were followed closely by large formations of twin-engine fighters, firing numerous rockets from projectors carried under the wings. The Germans attacked one formation at a time; firing from approximately 1,000 yards, the enemy lobbed rockets to break up the formation and finished off the stragglers and cripples with gunfire. The AAF bombers did a commendable job in hitting the targets, but suffered the loss of sixty B-17s and damage to another 138. These casualties were almost identical to those of the first Schweinfurt raid. The Americans faced a major crisis: in seven days they had lost 148 bombers, far above the 10 percent of the force that AAF leaders considered prohibitive to operations. The Allied air forces could not achieve air superiority until sufficient long-range escort became available.

As 1943 drew to a close, the buildup of heavy bombers and fighters continued in Britain. From midyear to the end of December, the total number of combat aircraft leaped from 1,260 to 4,242. Training programs



PHOTO # 6

Maj. Gen. Jimmy Doolittle took command of the Eighth Air Force in Britain when Arnold established the United States Strategic Air Forces in Europe.

had fallen behind schedule and difficulties were encountered with the buildup of service units, but the increased flow of men and aircraft showed U.S. determination to meet the heavy commitments for 1944. The fighter escort force showed definite improvement. The P-38 was proving its mettle, and wing tanks extended the range of the P-47. Most important, P-51s, designed primarily for long-range fighter escort, were arriving in significant numbers. The AAF appeared ready to take on the Luftwaffe for control of the skies over Europe.

With the experience of 1943 behind him, Arnold decided to reorganize the U.S. air forces in Europe. Having secured Eisenhower's approval, Arnold established the United States Strategic Air Forces (USSTAF) in Europe, comprising the Eighth Air Force in Britain and the Fifteenth Air Force in the Mediterranean. Finally, Arnold made major changes in the commanders, transferring Lt. Gen. Ira Eaker from the Eighth Air Force to command the Mediterranean Allied Air Forces, Maj. Gen. James H. Doolittle from the Fifteenth Air Force to command the new Eighth Air Force, and Lt. Gen. Carl A. Spaatz from the Mediterranean Allied Air Forces to command the USSTAF.

Rested, replenished, and reorganized when 1944 began, the AAF prepared to renew its challenge to the Luftwaffe. Arnold ordered his air commanders to "Destroy the enemy air force wherever you find them, in the air, on the ground and in the factories." Wrestling the skies from the Luftwaffe would ensure the success of both the strategic bombardment campaign and the Allied invasion of northwest Europe that was planned for June.

Big Week

On February 20, 1944, in the spirit of Arnold's directive, the USSTAF launched a series of missions against Germany that became known as "Big Week." The planners intended to lure the Luftwaffe into a decisive battle by launching massive attacks on the German aircraft industry. By defeating the Luftwaffe, the Allies would achieve air superiority and the invasion of Europe could proceed.

During Big Week, February 20–26, 1944, the Allies flew heavily escorted missions against airframe manufacturing and assembly plants and other targets in numerous German cities, including Leipzig, Brunswick, Gotha, Regensburg, Schweinfurt, Augsburg, Stuttgart, and Steyr. In six days, the Eighth Air Force bombers flew more than 3,000 sorties and the Fifteenth Air Force more than 500. Together they dropped roughly 10,000 tons of bombs and seriously disrupted German fighter production, denying the enemy hundreds of aircraft at a time when they were badly needed. The United States lost 226 heavy bombers and 28 fighters.

The Big Week raids intensified the German dispersion of several industries, particularly aircraft and ball-bearing manufacturing. Although this enabled the enemy to continue fighter airframe production, it rendered the industry extremely vulnerable to systematic attacks on the transportation network.

The weeklong offensive also seriously eroded the morale and capability of the Luftwaffe. U.S. aircrews claimed more than 600 German fighters



PHOTO # 7

Manufacturing and assembly plants in Regensburg/Prufening, Germany, were some of the targets destroyed by the Eighth and Fifteenth Air Forces during Big Week.

destroyed and achieved almost immediate air superiority. The Luftwaffe never recovered from the downing of so many skilled fighter pilots. It had to abandon full-scale opposition to the daylight bombing missions in favor of rationing resistance as circumstances and capabilities dictated. In effect, the Germans conceded air superiority to the Allies.

Big Week bolstered the confidence of U.S. strategic bombing crews. Until that time, Allied bombers deliberately avoided contact with the Luftwaffe; now, they deliberately used any method that would force the Luftwaffe into combat. Implementing this policy, the United States looked toward Berlin. Raiding the German capital, Allied leaders reasoned, would damage important industries and bring the Luftwaffe to battle. Consequently, on March 4, the USSTAF launched the first of several attacks against Berlin. Fierce battles raged and resulted in heavy losses for both sides. The Allies replaced their losses; the Luftwaffe could not do so and it grew progressively weaker.

By the spring of 1944, Allied strategic forces operating under the combined bomber offensive had attacked German submarine construction yards, aircraft plants, transportation systems, and other industrial facilities with limited success. They had fought the Luftwaffe in the skies over Europe and, despite suffering severe losses, they had never turned back. When the combined bomber offensive officially ended on April 1, 1944, and control of the strategic air forces passed to Eisenhower, Allied airmen were well



PHOTO # 8

The blast and concussion effects of high-altitude daylight bombing by the U.S. Eighth Air Force were evident in the wrecked reinforced concrete columns and roof panes of the Messerschmitt factory paint shop at Augsburg, Germany.

on the way to achieving air superiority over all of Europe. While they continued strategic bombing, the AAF turned its attention to the tactical air battle in support of the Normandy invasion.

The Tactical Air War over Normandy

Preparations for sustained tactical air operations began in October 1943 when Arnold transferred the headquarters of the Ninth Air Force from North Africa to England. The Ninth Air Force transferred its tactical units to the Twelfth Air Force, which remained in the Mediterranean theater, and initially drew on the Eighth Air Force for replacements.

During the first half of 1944, while the Eighth Air Force participated in the combined bomber offensive, the Ninth Air Force—commanded by Maj. Gen. Lewis Brereton and comprising the IX Fighter Command, the IX Bomber Command, and the IX Troop Carrier Command—acquired, trained, and equipped its tactical, technical, and service units. During its buildup, the Ninth Air Force also carried out medium-bomber attacks on the German rocket-launching sites on the northern coast of France and, in support of the combined bomber offensive, bombed airfields and marshaling yards, primarily in France. Fighters from the Ninth Air Force frequently flew long-range fighter escort for the heavy bombers of the Eighth Air Force.

Overture to Overlord

When Eisenhower assumed control of the Allied air forces in April 1944, he had to decide how best to use those forces to invade Europe. He weighed two major proposals. Spaatz advocated the destruction of German oil refineries by heavy bombers to immobilize the German armed forces. Opponents of Spaatz's "oil plan" argued that the desired results would not happen soon enough to affect the invasion. Air Chief Marshal Arthur Tedder of Britain proposed the destruction of the German/French marshaling yards and other transportation targets to isolate German

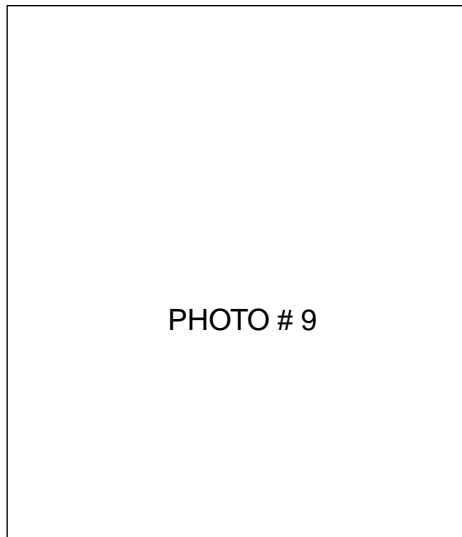


PHOTO # 9

Air Chief Marshal Arthur Tedder, RAF, proposed a "transportation plan" to target German/French marshaling yards to isolate enemy armies.



PHOTO # 10

The railyard at Chalon, France, was reduced to a mass of twisted steel by an attack of Allied air forces. At the time of the attack, the yard was jammed with supplies for troops facing the Allied armies advancing from southern invasion beaches and troops evacuating to Germany.

armies in the invasion area. Opponents of Tedder's "transportation plan" argued that it did not make effective use of the heavy bombers and, worse, would kill or wound many French civilians. After consulting with Maj. Gen. Pierre Joseph Koenig, commander of French Forces in the United Kingdom, Eisenhower ordered the transportation plan implemented. To minimize civilian casualties, the Allies banned attacks on moving trains and restricted their initial efforts to marshaling yards and bridges. Although Eisenhower insisted on the primacy of transportation targets, he did permit the Eighth Air Force to attack the German oil industry as circumstances permitted.

As a result of Eisenhower's choice, the Ninth Air Force escalated attacks against rail centers in the first half of April 1944. On an April 8 mission to Hasselt, Belgium, 163 B-26s dropped 263 tons of bombs and 101 P-47s carried out dive-bombing attacks. Two days later, when P-51s went to dive-bomb the area, the smoke was still rising from the damaged repair shops. By the middle of the month, the Ninth had developed a very effective method for attacking these targets. On a typical mission, four or five groups of B-26s, consisting of about thirty-five aircraft each, bombed a particular rail center. Instead of having large formations drop bombs on a signal from the lead aircraft, attacking forces split into numerous four- or

six-cell elements and dropped their bombs as smaller units, thereby increasing accuracy and reducing civilian casualties.

Meanwhile, the Eighth Air Force attacked marshaling yards and other targets in Belgium, northeastern France, and western Germany. The Fifteenth Air Force, operating from bases in Italy, attacked targets in southern France and central Germany. By the end of April, the Allied air forces had done enormous damage to many continental rail centers. The Germans responded by intensifying repair work and increasing their anti-aircraft defenses around critical areas. In May, the Allied attacks expanded, but the Germans were still able to move trains.

On May 20, responding to this continued movement, the commander of the Allied Expeditionary Air Force, Air Chief Marshal Trafford Leigh-Mallory of Britain, authorized widescale fighter sweeps against moving trains. Prior to this order, Allied fighters had been attacking moving trains without the express approval of higher headquarters. After May 20, the attacks were carried out openly on a large scale. In the next two weeks, fighters damaged approximately 475 locomotives and cut railway lines at more than 100 different points. These raids severely disrupted enemy traffic, ruined equipment, and produced important psychological effects among railroad personnel. French crews abandoned their trains in large numbers, especially after Allied fighters began dropping belly fuel tanks and setting trains on fire by strafing. The Germans reacted by manning the trains with their own crews, but that was not enough. By the end of May, the enemy had been forced to sharply curtail daylight railway operations, even where the lines remained unbroken.

A highly successful interdiction campaign against bridges marked another key phase of the transportation program. After careful examination, Spaatz and Brereton pressed for the removal of bridges leading toward or into the invasion area. After consulting a British railway expert, Leigh-Mallory decided that using fighters to destroy bridges would be a waste of effort. However, on May 9, evidently on Brereton's initiative, eight P-47s dropped two 1,000-pound bombs each on a bridge over the Seine near Vernon and demolished it. That same day, the Allies damaged bridges at Oissel, Orival, and Mantes-Gassicourt. Faced with this evidence, Leigh-Mallory decided that tactical forces could do the job and ordered his



PHOTO # 11

Britain's Trafford Leigh-Mallory, air chief marshal of the Allied Expeditionary Force, reversed the earlier order against targeting moving trains.

airmen to bomb the bridges over the Albert Canal and the Meuse River. On May 24, the Allies made the bridges over the Seine the first priority. B-26s and P-47s began an intense campaign of low-level attacks, striking Le Manoir and Poissy on the 26th, and Juvisy, Le Manoir, Maisons-Lafitte, and Le Mesnil Ande on the 28th. The combination of the bombers dropping 2,000-pound bombs and the fighters diving with 500-pound bombs proved devastating. The Seine bridges fell rapidly, and, despite enormous efforts, the Germans could not keep up with the repairs. As the Operation Overlord invasion date approached, all of the crossings south of Paris were impassable.

Closely associated with the transportation campaign was the neutralization of airfields in western Europe from which the Germans might attack the Allied invaders. At a minimum, the Allies wanted to drive the enemy fighters to bases in the east where they could not threaten the invading forces. By the spring of 1944, the Allies had achieved this goal. However, because the airfields still existed and could be used by a redeployed Luftwaffe, the Allies decided to attack the potential airfields before the invasion. The problem was how to conceal their interest in these installations while inflicting severe damage so close to the invasion date that there would not be time for the Germans to repair them.

Early in May, Leigh-Mallory had identified all usable landing grounds within 350 miles of Caen, France. Assigning responsibility for their neutralization to RAF Bomber Command and the Eighth, Fifteenth, and Ninth Air Forces, he permitted each commander to decide when and how to bomb the airfields. On May 11, the Allies began an unrelenting campaign. By D-Day, June 6, they had attained their main purpose. The



PHOTO # 12

The Allied destruction of bridges over the Seine, such as this one at Oissell, was part of the plan to halt troop and supply transportation to enemy forces.



PHOTO # 13

German forces could not repair the Seine bridges rapidly enough to maintain adequate crossings.

Luftwaffe did not have enough usable airfields within practical striking distance of the Normandy beachhead. German air opposition to the invasion was so slight that it astonished the Allied air commanders.

As the invasion date neared, the Allies turned their attention to the enemy coastal batteries. Initially they used medium and light bombers and fighter-bombers against the German defenses, but later they sent the heavy bombers from the RAF Bomber Command and the Eighth Air Force. To conceal their interest in Normandy, they bombed two targets outside the invasion area for every target within.

A German radar net extending from Norway to the Spanish border with France posed another problem for the Allies. This radar could detect airborne and seaborne forces and, if used properly, could coordinate both coastal and flak defenses. Consequently, using the precedent set for the coastal batteries, the Allies attacked two radar sites outside the invasion area for each site within. By D-Day, the Allies had crippled or wiped out nearly all of the sites in the invasion area. As a result, the Germans were virtually blind to Allied movements and thoroughly confused about the nature and intentions of the invasion forces.

The Great Crusade

In the final hours of June 5, 1944, a vast aerial armada assembled in the skies over Britain. More than 900 C-47 aircraft and 100 gliders, carrying approximately 17,000 airborne troops, set out for the Normandy

invasion area. RAF night fighters provided escort and later attacked enemy guns and searchlights, while other British aircraft dropped strips of metal foil to confuse the German radar operators. The armada soon encountered trouble. Fog and cloud cover, and, later, enemy anti-aircraft fire, broke up many of the airborne formations. Even the trained pathfinders had trouble locating the drop targets. As a result, the airborne forces were widely scattered over the French countryside. Nevertheless, they captured Sainte-Mère-Église, helped secure exits from the beachhead, guarded the southern flank of the invasion area, and spread confusion among the German defenders.

Early the next morning, 1,083 B-17s and B-24s attacked the German defenses on the Normandy beaches. Led by radar-equipped pathfinder aircraft, the heavies flew over the beaches at right angles and dropped 2,944 tons of bombs.

Taking off before dawn, medium and light bombers staged last-minute attacks against enemy gun batteries on Utah beach and later in the day switched to other targets, such as communications centers, command posts, and supply depots. The fighter-bombers protected the cross-channel movement, helped neutralize beach defenses, flew close air support sorties for the troops on the beaches, and attacked the enemy's ability to use the roads leading into the battle area. To support the ground troops, IX Engineer Command landed units on Utah beach on D-Day and on Omaha beach on D-Day plus 1. Within sixteen days, Allied air power had five fighter-bomber groups based in Normandy; by June 30, nine all-weather airfields had been completed and seven more were under construction.



PHOTO # 14

American aviation engineers constructed airfields to support the Allied invasion forces in France.

From D-Day until the end of July, the Ninth Air Force concentrated on flying missions against the enemy in cooperation with the ground forces and on transferring tactical air units to the continent as quickly as possible. On June 22, the Allies used all available fighter-bombers to launch a massive bombing assault against German fortifications and troops defending Cherbourg. The city fell on June 27 and within three weeks supply ships began using the harbor.

By the end of July, eighteen fighter-bomber and reconnaissance groups were on the continent and an efficient radar control system had been established on the beachhead. Meanwhile, medium and light bombers, still operating from Britain, bombed bridges over the Seine and Loire Rivers, attacked railway yards, and destroyed German fuel and ammunition supply points along the entire Normandy front. As the battle continued, the fighter-bombers attacked German strong points, troop formations, self-propelled artillery, tanks, and armored cars.

Heavy bombers did their part to support the invasion throughout June and July. Almost every day that the weather permitted, the heavies bombed airfields, bridges, choke points, marshaling yards, rail targets, construction and supply sites, and oil refineries.

But even with the heavy air support, the ground offensive began to stall, particularly in the hedgerow country around Saint Lô. Gen. Omar N. Bradley, commander of the First Army, devised a plan to use bombers to blast a hole through the German lines and allow the Allied forces to break out of the invasion area. Designated Operation Cobra, the attack began on the morning of July 25. Over 1,500 heavy bombers, 380 medium bombers, and 550 fighter-bombers dropped hundreds of tons of bombs in the Cobra area, killing German soldiers, burying equipment, destroying tanks, cutting telephone wires, and disrupting communications with the German forward echelons. The U.S. ground forces, taking advantage of the confusion and demoralization of the Germans, broke out of the hedgerow country. Although the air attack was marred by short rounds that killed and wounded U.S. soldiers, it still made an important contribution to the overall success of Cobra.

As the breakout from the hedgerow country proceeded, the Americans intensified their efforts in close air support. To better carry out the ground support mission, the Army Air Forces established two tactical air commands (TACs): the IX TAC, under Maj. Gen. Elwood R. Quesada, and the XIX TAC, under Brig. Gen. Otto P. Weyland. Later, in September, a third organization, the XXIX TAC, was formed under the command of Brig. Gen. Richard E. Nugent. These tactical air commands were partnered with and supported the First and Third Armies and the 6th Army Group, respectively. In an innovative move, the Allies installed radios in fighter-bombers and tanks that allowed direct communication among the aircraft and the tanks. Operating from newly created airstrips in Normandy, the fighter-bombers provided continuous air support for the Allied armored forces.



PHOTO # 15



PHOTO # 16

Ammunition trains were special targets for the U.S. Eighth Air Force. In the photos here, *from top to bottom*, a railcar loaded with ammunition is hit, explodes, and is consumed in flames so intense they burned the camouflage from the underside of the attacking bomber.



PHOTO # 17

At first, the IX Troop Carrier Command remained in Britain airlifting supplies and, when necessary, airborne troops to the continent. However, the speedy advance of the Allied ground armies, the scale of combat, the distances involved, and the demand for supplies all placed a severe strain on the air transport system. Therefore, in October, the IX Troop Carrier



PHOTO # 18

From left, Maj. Gen. Elwood R. Quesada, Lt. Gen. Omar Bradley, and Gen. Dwight Eisenhower.

Command began moving units into the Le Mans and later the Chartres areas of France.

The strategic air forces, while supporting the invasion, also continued when possible to fly strategic bombing missions. On June 8, Spaatz issued an order to the Eighth and Fifteenth Air Forces specifying that their primary strategic mission was to deny oil to the German armed forces. USSTAF assigned to the Fifteenth Air Force the crude oil refineries near Ploesti, Vienna, and Budapest, along with the synthetic petroleum plants in Silesia in Poland, and the Sudetenland. The synthetic oil plants in central and eastern Germany were delegated to the Eighth Air Force, along with the crude oil refineries near Hamburg, Bremen, and Hannover. RAF Bomber Command joined in the effort by bombing synthetic oil plants in the Ruhr valley.

Within a week of Spaatz's order, the Fifteenth Air Force bombed the major Hungarian refineries, all of the production plants in Yugoslavia, and almost all of the Italian refineries. At Ploesti, the Fifteenth faced a new German defensive measure. As the enemy detected the incoming bombers, they used the warning time to light hundreds of smoke pots around the oil fields, thus concealing the area before the U.S. bombers arrived. This tactic forced the aircrews to resort to blind bombing through the smoke.

Because of its commitments to the invasion, the strikes at the German terror weapons, and poor weather, the Eighth Air Force did not launch a mission against the oil targets until June 18, when fifteen combat wings of B-17s attacked eleven oil installations in northwestern Germany. Two days



PHOTO # 19

AAF Boeing B-17s attacked oil installations in Germany.



PHOTO # 20

The Hamburg oil refinery was destroyed by bombers from the U.S. Eighth Air Force.

later, the Eighth dispatched a massive force of more than 1,300 heavy bombers and 729 escorting fighters against the oil targets at Hamburg, Harburg, Ostermoor, Misburg, Politz, and Magdeburg. The USSTAF continued to fly these missions whenever possible into the autumn of 1944.

In an effort to cross the Rhine, the Allies launched a major ground and airborne assault known as Market-Garden. “Market” referred to the air phase of the assault and “Garden” to the ground phase. Market began



PHOTO # 21

Gen. Carl Spaatz, *left*, and Lt. Gen. James Doolittle, *center*, debriefed a crew that participated in the bombing raid on an oil refinery at Halle, Germany.

the night of September 16/17 when 282 aircraft from RAF Bomber Command attacked flak defenses and airfields at Leewarden, Steewijk-Havelte, Hopsten, and Salzbergen, all of which were within easy striking distance of the drop and landing zones. Later in the morning, the Eighth Air Force sent more than 800 B-17s to attack anti-aircraft positions along the routes the troop carriers would follow. After the bombers, 1,546 aircraft and 478 gliders carrying troopers from the U.S. 82d and 101st Airborne Divisions and the British I Airborne Division converged on the drop zones. Throughout a period of three days, approximately 20,000 airborne troops, including the Polish 1st Independent Parachute Brigade, landed on a narrow, sixty-mile-long drop zone in the Netherlands. They tried to capture bridges at Eindhoven, Veghal, Grave, Nijmegen, and Arnhem and hold them until British infantry and armored forces could punch their way through, relieve the airborne forces, cross the Rhine, and advance into Germany. Although the airborne forces captured several of the bridges, the attack failed because of fierce German resistance and the presence of two German tank divisions in the area.

As the Allied armies advanced in the autumn of 1944, they faced a logistics nightmare. Existing port and transportation facilities were strained to the breaking point, and with winter coming the problem would only get worse. The Germans had left the port of Brest in ruins, and other enemy-held ports faced a similar fate. Encountering that situation, Eisenhower nevertheless looked toward the port of Antwerp and gave it a paramount place in Allied strategy.

**U.S. paratroops prepare
for a drop.**

PHOTO # 22



On September 22, Eisenhower held a meeting of his chief commanders and primary staff officers to discuss the current operational situation and future strategy. He ordered Gen. Bernard L. Montgomery, the commander of 21 Army Group, to clear the Schelde Estuary and capture the port of Antwerp and he directed Bradley to continue his move toward Cologne and Bonn and to strengthen his left flank, which bordered the British Second Army. These plans affected the Ninth Air Force and its tactical air commands.

IX and XIX TACs immediately expended a greater effort on the German rail system west of the Rhine. In addition, Ninth Air Force units assisted Montgomery in the capture of Antwerp. They also played an important role in the attack on Aachen, the gateway to the Ruhr valley. During this assault, the fighter-bombers of IX TAC flew nearly 6,000 close air support missions against pillboxes, strong points, artillery and troop concentrations, gun positions, command posts, and airfields.

Medium bombers and fighter-bombers also devoted time and effort to attacks on the German transportation system. In addition to rail-cutting missions, they made successful attacks against bridges at Cologne, Remagen-Dumpelfeld, Norvenish-Modrath, Ahrdorf, and Euskirchen.

Fighter-bombers also struck at marshaling yards almost every day they were able to fly and kept a lookout for targets on the highways and railroads. Although they destroyed hundreds of trucks, armored vehicles, tanks, locomotives, and railway cars, they were unable to isolate particular battle areas completely. The Germans exhibited an extraordinary ability to make rapid repairs on damaged rail lines, yards, and bridges. This ability,

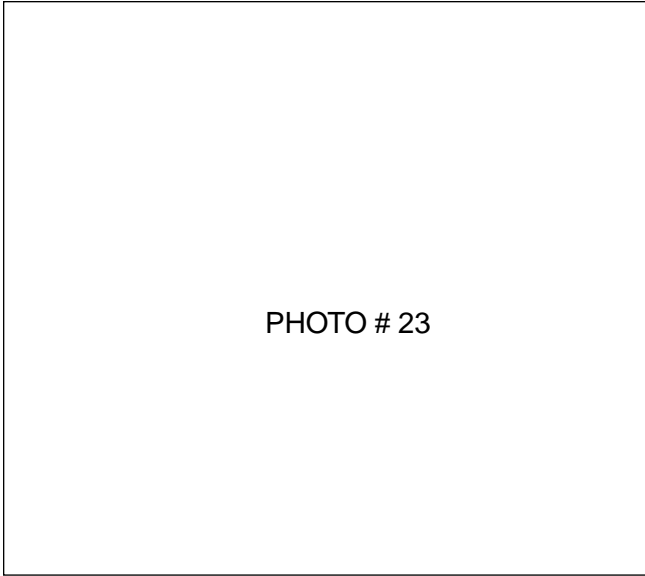


PHOTO # 23

Marshaling yards in Germany continued to be daily targets for Allied fighter-bombers.

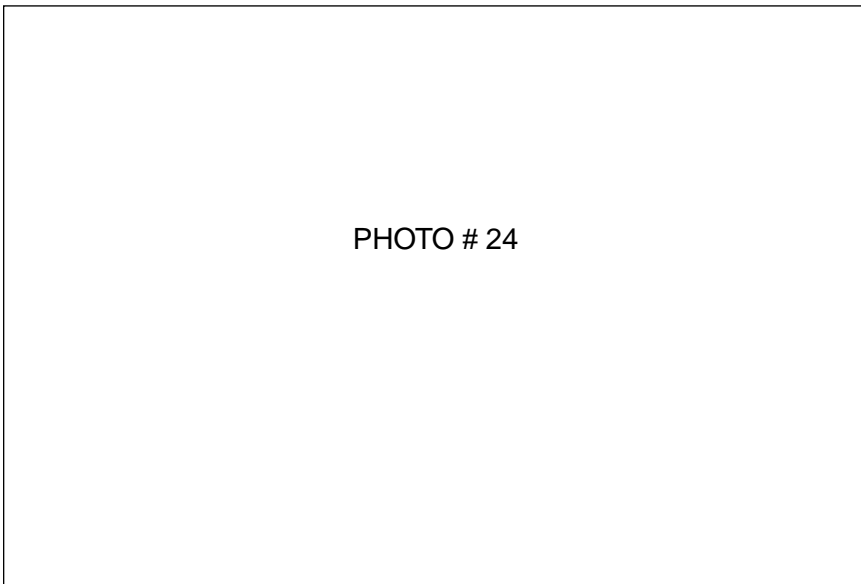


PHOTO # 24

The remains of an enemy convoy bombed and strafed by AAF Republic P-47 Thunderbolts litters a roadway in Germany.

coupled with a dense network of rails that allowed for the use of alternate routes and weather that frequently grounded Allied aircraft, caused immense frustration for Allied leaders.

A bomb blast blew this locomotive into a crater. Allied attacks against rail traffic were given greater emphasis in the latter half of 1944.

PHOTO # 25



PHOTO # 26



Allied bombers destroyed this railroad bridge at Dillengen, Germany.

The strategic forces, besides conducting the oil campaign, waged a bombing offensive against German ordnance depots, tank assembly plants, and motor vehicle factories. Specifically, the Allied leaders ordered attacks on seven plants that produced medium and heavy trucks: Ford at Cologne, Saurer at Vienna, Daimler-Benz at Gaggenau, Bussing at

Brunswick, Borgward at Bremen, Adam Opel near Berlin, and Daimler-Benz at Mannheim. By the end of September, the Eighth Air Force had inflicted heavy damage on these targets, and that encouraged the Allies to intensify their efforts in October. Although air attacks damaged the facilities and caused a decline in motor vehicle production, ordnance production continued and the output of tanks actually rose.

In the early autumn of 1944, the Allied air forces intensified their efforts against Germany's railways and waterways. The heavy bombers attacked marshaling yards in Cologne, Münster, Mainz, Saarbrücken, Munich, Vienna, and Essen, among others. The tactical air forces, flying out of eastern France and Belgium, cut railroad lines at more than 1,000 points and destroyed about a thousand locomotives. RAF Bomber Command tried to break the canal embankments along Germany's vital waterways, but once again the enemy proved effective at making repairs.

Tedder believed that the attacks against the German transportation network were too haphazard, and on October 28 he convened a meeting of Allied air leaders to revise priorities. They continued to give the oil campaign preeminence, but elevated in importance the destruction of the German transportation network over displacing tanks, trucks, and ordnance depots.



PHOTO # 27

The railyards at Leipzig were destroyed by Allied bombing runs.



PHOTO # 28

This scene of desolation, once the thriving railyard at Freiburg, Germany, shows the terrific striking power of the Allies' medium and fighter-bombers. The Germans tried to make repairs between assaults, but the task was too great and the raids too frequent.

Soon the Eighth Air Force assembled more target information on the enemy rail centers and during the first two weeks in November bombed marshaling yards and repair facilities in Koblenz, Frankfurt, Hamm, Hamburg, Ludwigshafen, Minden, Neunkirchen, Oberlahnstein, Rheine, and Saarbrücken. For their part, the tactical air forces continued to bomb moving traffic and cooperated with the strategic air forces in bombing the marshaling yards.

A Diversion from Strategy and an Experiment in Bombardment

During the final six months of 1944, Eighth Air Force devoted most of its resources to crippling German resistance to the Allied advance across western Europe. Public outcry, however, forced the diversion of some heavy bombers on missions to end the lethal barrage of German V-1 "buzz bombs" and V-2 rockets raining on Great Britain and Allied-occupied Europe. During this period, the Eighth and Fifteenth Air Forces also participated in a shuttle bombing experiment involving the use of bases in the Soviet Union.

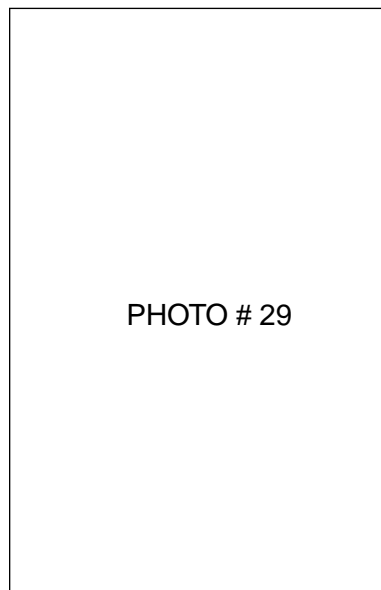
Operation Crossbow

In the predawn hours of June 13, 1944, a jet-propelled German missile, designated the V-1, left a launching pad in the Pas de Calais area of France and sputtered across the English Channel, landing near the center of London. Within twenty-four hours, the Germans launched almost 300 of these flying buzz bombs against the United Kingdom. The Allies reacted, under the operational name of Crossbow, by attacking the launching sites with fighter-bombers. Later, in addition to using fighter patrols, radar-controlled anti-aircraft guns, and barrage balloons, the British requested the use of heavy bombers to destroy the launch sites. Spaatz objected to the diversion of his heavy bombers away from the strategic mission, but in response to British losses Eisenhower ordered Spaatz to attack the launch sites.

In September 1944, the problem worsened because the Germans began launching the V-2, a rocket-powered ballistic missile that flew at almost 4,000 miles per hour and descended without a warning noise. The Allies responded by bombing not only the launching sites but also the support installations. Regrettably, these bombing attacks were largely ineffective and the German “vengeance” weapons were not neutralized until the Allied ground armies overran the launch sites. The raids cost the lives of more than 700 Allied airmen and destroyed at least 154 aircraft.

Shuttle Bombing

The idea of shuttle bombing—aircraft taking off from a base in one country, bombing a target, and flying on to a base in a second country—appealed to U.S. airmen as early as 1942. They theorized that if the United States acquired bases in the Soviet Union, then the AAF could attack Germany from different directions, have a choice of exit routes, and force the Germans to disperse their fighter defenses. After months of negotiations between Soviet leader Joseph Stalin and the U.S. ambassador, W. Averill Harriman, Stalin authorized the use of bases at Mirgorod, Piryatin, and Poltava, located east of the Dnieper River and southeast of Kiev.



Ira C. Eaker, commander of the Mediterranean Allied Air Forces, led groups of B-17s and P-51s in a shuttle mission between Italy and the Soviet base at Poltava.

On June 2, 1944, Eaker, commander of the Mediterranean Allied Air Forces, led four groups of B-17s and a reinforced group of P-51s from bases in Italy on a bombing mission to Debrecen, Hungary. After successfully bombing the marshaling yards there, the Americans flew on and landed at Poltava. On June 6, flying from Poltava, the heavies struck an airfield at Galatz, Romania. Five days later, the Americans returned to Italy.

The Eighth Air Force flew its first shuttle mission out of England on June 21, 1944. A force of 114 B-17s, escorted by 70 P-51s, bombed a synthetic oil plant south of Berlin and proceeded to the Soviet bases. Undetected by the Americans, a German aircraft followed them to Poltava, and the pilot reported the location to his superiors. Later that night, the Luftwaffe bombed and strafed the Poltava airfield. The Eighth Air Force lost 43 B-17s and 15 P-51s. The enemy also set off U.S. ammunition dumps and ignited 450,000 gallons of gasoline. Elated by that success, the Germans returned the next night to bomb the other shuttle sites.

In the aftermath of the Poltava disaster, the Soviets refused to allow AAF nightfighters to defend the bomber bases, insisting that air defense was their responsibility. Realizing that the Soviets could not adequately protect the heavy bombers from night raids, the Americans abandoned plans to permanently station three heavy bomber groups on Soviet airfields. To keep the project alive, the AAF next shuttled P-38 and P-51 fighters to the Soviet Union, but after balancing losses and battle damage against the value of the targets, U.S. military leaders at the Soviet bases discontinued the fighter-bomber operations. Although the heavy bombers flew a few more shuttle missions, logistical problems and growing Soviet intransigence forced the cancellation of shuttle bombing in late 1944.

The Battle of the Bulge

As the German armies retreated, Hitler and his generals planned a major counteroffensive through the Ardennes against the ground forces of the western Allies. Hitler's goals were to capture Antwerp, divide the Allied armies, and ease the immediate threat to the Ruhr industrial area. The plan depended on surprise, speed, and bad weather for several days so Allied air power could not interfere.

On December 16, 1944, the Germans attacked on a front between forty and sixty miles wide, using more than 200,000 men and as many tanks as they could muster. Driving a wedge between the U.S. First and Third Armies, they pushed on toward the Meuse River. Many American troops, surprised and confused, fell back or surrendered; however, some troops fought on and delayed the enemy just long enough to allow the Allied commanders to react. In the north, the U.S. 7th Armored Division blunted the German offensive at St. Vith, and U.S. airborne troops held



PHOTO # 30

Nearby houses were shattered when this ammunition or oil truck exploded during an Allied attack on enemy transportation during the Battle of the Bulge.

out at Bastogne. In the south, Lt. Gen. George Patton turned his Third Army ninety degrees and drove into the German flank.

The enemy had accumulated a sizable air force to support its drive, but clouds and snow prevented either side from using air power effectively in the first week of the battle. But in spite of the weather, both sides flew sorties. On December 17, the Germans flew more than 600 sorties in support of their ground forces, most of them in the vicinity of St. Vith. The same day, the United States also launched over 600 sorties in support of Allied ground troops. Many of the fighter-bombers had to jettison their bombs and engage in air-to-air combat with the Germans. At the end of the day, the Americans claimed sixty-eight enemy aircraft destroyed at a cost of sixteen losses. On December 18, U.S. pilots, flying in very bad weather and under an exceedingly low ceiling, found and attacked a German convoy, destroying thirty-two armored and fifty-six motor vehicles. That same day, the Eighth Air Force sent almost 1,000 heavy bombers against marshaling yards at Koblenz-Lutzel, Cologne-Kalk, Ehrang, and Mainz. In addition, the Eighth attacked choke points between Luxembourg and the Rhine.

When the weather cleared on December 23, the battle began in earnest. The Germans committed over 800 fighters to support their forces and to attempt to gain local air superiority. The Allied response was overwhelming. Hundreds of fighters, fighter-bombers, and medium and heavy bombers from the Eighth and Ninth Air Forces and RAF Bomber Command filled the skies over Europe. They engaged the Germans in air-to-air combat and strafed and bombed enemy positions, troop concentrations, tanks, motored vehicles, trains, bridges, and artillery, in effect, isolating the battlefield. They defeated the Luftwaffe in the air, and the German armies, although fighting tenaciously on the ground, had to retreat to the lines they held before the battle began. The extent of the defeat was staggering: between December 16, 1944, and January 31, 1945, the Allies claimed to have destroyed 11,378 motor transports, 1,161 tanks and armored vehicles, 507 locomotives, 6,266 railroad cars, 472 gun positions, and 36 bridges. The claims also included 974 rail cuts and 421 road cuts. Still the Germans fought on.

While savoring the victory, some Allied air leaders were questioning how effective the air war had been. The Allies had bombed Germany from one side to the other, destroyed large parts of its cities and many of its factories, and devastated its transportation system and oil refineries. But, somehow, the Germans had still been able to mount a major counteroffensive. Despite the bombing, the Germans were sending up increasing numbers of jet aircraft, developing new submarines, and refining oil. Arnold told his intelligence staff to reevaluate the bomb damage assessment and he asked Spaatz for a “glimmer, a light, a new thought, or something which will help us to bring this war to a close sooner.” Spaatz, also somewhat pessimistic, wrote of recasting the strategic air war and perhaps directing the bombers toward the destruction of the enemy’s field armies. Both men underestimated the damage done by the Allied bombing. Neither realized at the time that the Germans were using the last of their carefully hoarded resources, and that Germany’s development of new weapons was a futile gesture, amounting to too little and coming too late.

The AAF Pursues Victory in Europe

In February 1945, as the Allied ground armies began to push into Germany, the Allied air leaders, despite their earlier concern, were determined to intensify the air attacks and force the Germans to surrender. On February 3, nearly 1,000 B-17s bombed targets in Berlin, while roughly 400 B-24s attacked railway and oil targets around Magdeburg. Some 25,000 civilians were killed, raising the charge that the United States was conducting terror bombing attacks. Spaatz vehemently denied these charges and pointed to the many times he had refused to carpet bomb German cities and instead went after strategic targets. In any case, the



PHOTO # 31

Boeing B-17s, the Flying Fortresses of the U.S. Eighth Air Force, bombed Berlin throughout February 1945. In less than three months, the war in Europe would be over.

strategic forces continued as before, concentrating on German oil production and transportation facilities and adding new targets, such as the German jet aircraft industry, when necessary. For example, on February 16, the Fifteenth Air Force bombed an Me 262 plant near Regensburg.

In mid-February, Supreme Headquarters, Allied Expeditionary Force (SHAEF) asked the air force to implement Clarion, a plan designed to use all available Allied air power in strikes against German communications to damage the enemy's economy and help the tactical situation. As a result, Allied airmen attacked grade crossings, stations, barges, docks, signals, tracks, bridges, and marshaling yards. The strategic air forces also responded to requests from the Soviet Union to assist on the eastern front by bombing targets such as the railroad center at Oranienburg.

Meanwhile, the Allied ground forces were advancing on the Rhine, and the tactical air forces increased the tempo of attack. Day after day the fighter-bombers and medium bombers relentlessly strafed and bombed columns of troops, trucks, tanks, and horse-drawn carts.

On the morning of March 7, units of the 9th Armored Division found that the Ludendorff Bridge at Remagen had been left intact by the withdrawing Germans. They immediately seized the bridge and notified Bradley, who ordered all available forces to cross the bridge using utmost

speed. By the end of the day on March 8, the Americans had enlarged the bridgehead to nearly a mile and a half in both depth and width. When the Germans counterattacked, the IX Tactical Air Command began flying intensified armed reconnaissance missions to interdict enemy reinforcements. Beginning on March 13, and continuing through March 24, the command flew over 6,000 sorties and bombed an assortment of rail and road targets. Claims included over 1,700 motor transports, over 200 tanks and armored vehicles, approximately 200 locomotives, 3,500 railway cars, and nearly 500 railroad cuts. The fighter-bombers also attacked German strong points, gun positions, troop concentrations, ammunition dumps, and defended villages.

On March 23, U.S. First Army troops moved out of the Remagen bridgehead and advanced to the Sieg River. At the same time, British and Canadian troops began assaulting German positions on the Rhine north of the Ruhr. As part of the plan, the U.S. IX Troop Carrier Command launched over 2,000 aircraft and gliders to drop almost 15,000 airborne troops, 109 tons of ammunition, 645 vehicles, 113 artillery weapons, and other equipment and supplies. The airborne forces landed near the German town of Wesel and soon linked up with the advancing Allied ground troops. The Allies encircled the Ruhr valley and organized resistance in the area ceased on April 18 as approximately 300,000 German troops surrendered.

The Allied strategic air forces continued flying missions throughout April, facing flak and German jet aircraft, but only the weather could stop them. Toward the end of the month, the heavy bombers ran out of worthwhile strategic targets and turned to support the ground troops.

As the Allied ground and air forces surged into Germany, Hitler appointed Grand Admiral Karl Dönitz to be his successor and then committed suicide. On May 7, German officials surrendered at Eisenhower's headquarters, and the European war ended.

The AAF's Contribution to Victory

With the conclusion of the war, AAF leaders could look back with pride. From an initial contingent consisting of Eaker and six other officers with no aircraft, the U.S. forces in northwest Europe had grown to almost a half a million men supporting thousands of fighter and bomber aircraft. Only twelve B-17s had mounted the AAF's first heavy-bomber raid of World War II, over Rouen, France, on August 17, 1942. By late 1944, the Eighth and Ninth Air Forces were routinely mounting operations numbering thousands of fighters and bombers. Adjusting strategy, tactics, and doctrine to practical experience, the Americans had driven the Luftwaffe from the sky.

Strategic bombardment and the quest for air superiority were inextricably linked. Allied leaders expected and took air superiority over the

Normandy battlefield. To achieve that goal, the Allies had to entice the Luftwaffe into battle. The AAF soon discovered that when the American heavy bombers flew their missions, the Luftwaffe rose to fight. Thus the AAF not only bombed targets, but also battled the German air force for command of the air and defeated it. In addition, after the Normandy invasion, Allied airmen flew thousands of sorties in support of the ground forces, greatly contributing to their speedy advance. The cost was staggering: the Eighth and Ninth Air Forces alone lost almost 49,000 men killed or missing and presumed dead. But their great efforts had secured the skies over Europe and hounded the enemy forces on the ground.

The strategic bombing campaign, waged by the heavy bombers of the Eighth and Fifteenth Air Forces, varied in its effectiveness. Although the heavies damaged the German ball-bearing industry in the missions against Schweinfurt, the Americans were unable to continue intensive, sustained attacks against the industry and the Germans both dispersed their factories and drew on existing supplies. In the attacks against the German fighter aircraft plants, a similar pattern developed: the Germans dispersed their plants and, despite wild fluctuations in output, fighter aircraft production continued. The heavy bombers were most successful in their missions against the enemy's petroleum industry and in disrupting the transportation network. The Americans repeatedly bombed the oil fields in enemy-occupied territory and almost completely destroyed the synthetic oil industry in Germany. Although the enemy showed extraordinary resourcefulness in moving supplies, by the spring of 1945 Allied air power had bombed the German economy into a shambles and virtually paralyzed the transportation network. The Army Air Forces' achievements against Nazi Germany vindicated much of its prewar doctrine, proved its evolving tactics in strategic and tactical air war, and laid the foundation for a strategic air arm in the postwar period.

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