


OUR GERMAN SCIENTISTS

By Rebecca Grant



Wernher von Braun in 1969 at the Kennedy Space Center, Fla., with a Saturn V that he helped the US develop. At the end of World War II in Europe, he led several German scientists in surrendering to American—rather than Soviet—troops.

In May 1945, days before World War II ended in Europe, Private Fred Schneikert from Sheboygan, Wis., on sentry duty on the German-Austrian border, was approached by a young German man on a bicycle. He told Schneikert that his brother had been the V-2's inventor and now wanted to surrender.

Schneikert thought the man was nuts and told him so, but took Magnus von Braun into custody and said the Americans would investigate.

By the next morning, Schneikert's anti-tank company was holding several engineers from the rocket base at Peenemünde who had fled to the border area near Austria.

Their leader, Wernher von Braun, had indeed masterminded the V-2 and now wanted to be captured by Americans, not Soviet Russians.

In what today might be called the "preoffset," Americans raced around Europe at the end of the war gathering the scientific treasures of Nazi Germany's war effort. From Me 262 jet fighter assembly rigs to ballistic missile data from Peenemünde to the scientists themselves, the vast haul jump-started US Air Force technology dominance for the postwar era.

As the war wound down, Army Air Forces commander Gen. Henry H. "Hap" Arnold already had his eye on German technology.

Arnold had established Air Technical Intelligence teams to monitor enemy technology throughout the war. His advisor, Theodore von Kármán, collected a brain trust of scientists itching to exploit German advances once the war ended. In late 1944, teams



USAF photos

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German Federal Archives photo

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at Wright Field, Ohio, started composing “blacklists” of their most-wanted German aircraft.

Arnold “realized that the United States and its Allies by no means led the world in military aeronautical development,” wrote his biographer, Dik A. Daso in *Air & Space Power Journal*. The US had made up for a lag in prewar designs with rapid innovation in engines and aircraft, and American factories simply out-produced the Axis. Although the US led in a few crucial fields—such as encryption and radar—in other areas it was behind, even at the height of the war. An American jet fighter wasn’t fielded until just after the war ended in the Pacific.

Most egregiously, none of the victorious allies could match the reich’s rocketeers, who had terrorized London and the Low Countries with the V-2. The rocket’s velocity and penetration made it highly destructive against fixed targets.

Gen. Dwight D. Eisenhower, Supreme Allied Commander, concluded that if the Germans had perfected the V-2 six months earlier, they might have targeted the invasion staging areas in Portsmouth and Southampton. Operation Overlord “might have been written off,” Eisenhower wrote in his 1948 war memoir.

From Washington, the Joint Chiefs of Staff gave Eisenhower orders to “preserve from destruction and take under your control records, plans, books, documents, papers, files, and scientific, industrial, and other information and data belonging to or controlled by ... German ... organizations engaged in military research.”

Gen. Carl A. “Tooey” Spaatz, European air commander, ordered all those “not engaged in critical operational duties” to help seek out the “technical and scientific intelligence” that could

/1/ The rush to corral German technical and scientific knowledge after the war brought scientists such as Alexander Lippisch to the US. He had designed the rocket-powered Me 163 in Germany. This one is shown at the National Museum of the US Air Force in 2015. /2/ Lippisch was experienced in delta wing design, used by Convair in US fighter aircraft like the F-102, here on alert during the Vietnam War. /3/ Lippisch, left, and glider pilot Günter Groenhoff with a Lippisch Storch V, circa late 1920s/early 1930s.

be “of material assistance in prosecution of the war against Japan.”

The first name for the overall program of technology exploitation was Operation Overcast, and the AAF part of the effort was Operation Lusty, a bastardization of the initials for Luftwaffe Scientific Technology.

Operation Lusty began April 22, 1945, when the wartime technical intelligence teams merged with the new Exploitation Division. The initiative would enjoy firm high-level support from the assistant secretary for air, Robert A. Lovett, as well as Arnold, Spaatz, and others, such as Curtis E. LeMay, who would serve one postwar year heading research and development.

MOST WANTED

With Spaatz’s order, AAF teams moved forward, fanning out just behind armies advancing on the broad front, to locate blacklist aircraft. Some drove jeeps, while others flew into half-deserted German airfields in cargo aircraft. They lived with little support, camping in Luftwaffe barracks. Deep in Bavaria, some of them fished for trout or shot game for their meals.

Col. Harold E. Watson headed up the section of Operation Lusty charged with rounding up Luftwaffe airplanes. Watson divided his men into two sections, one for collecting propeller aircraft and one for jet aircraft. Both teams took on the name “Watson’s Whizzers.”

The most wanted aircraft in Operation Lusty was the swept-wing Messerschmitt Me 262 Schwalbe (Swallow) jet fighter. Pilots reported it achieved phenomenal speeds in combat. In a Military Channel interview, Bob Strobell, a P-47 pilot requisitioned for Operation Lusty, said that, near the end of the war, “we didn’t have any jet fighters. We needed what they had, back in the US as quickly as possible.”

Strobell took charge of the Me 262s at the Lechfeld air base. Nearly 30 Schwalbes in various states of repair were scattered around the field. Strobell recruited pilots and crew chiefs and ultimately relied on German personnel to get the jets flying and ready to be ferried to Cherbourg, France. To his surprise, the Germans cooperated. “They were apparently pretty proud of

the airplane that they had and wanted us to like it,” Strobell recalled.

The sleek Me 262s were fully operational and impressively easy to maintain. “I know for a fact you can change a jet engine on a Messerschmitt Me 262 in 30 minutes,” said Strobell. Other innovations included leading edge slats to improve performance at lower speeds.

Through trial and error, Strobell’s team figured out how to fly the Me 262s and ferried them to Cherbourg for embarkation on an aircraft carrier headed back to the States.

Operation Lusty ultimately exploited 9,132 separate installations. Most were known in advance, while others were a stroke of luck. In mid-April 1945, the

Much more complex was the issue of what to do with the people behind the technology. Originally, the victorious airmen thought mainly of retrieving airplanes and documents. However, the site visits of Operation Lusty relied on German help. It soon became evident that recruiting the Messerschmitt test pilots, Luftwaffe mechanics, and aeronautical engineers from German academia and industry would greatly enhance exploitation of the captured technology.

“What was really needed to redress the United States’ scientific backwardness were the men who had designed and built the jets, missiles, and wind tunnels,” wrote retired Col. Wolfgang

At the end of the war in Europe, Allied teams raced to capture and exploit the best brains of the Third Reich.

US 1st Infantry happened on a facility near Braunschweig that turned out to be the Hermann Göring aeronautical lab, boasting the most sophisticated wind tunnels yet built. A budding forest cloistered the facility and stork nests dotted the roofs of the buildings.

The Germans called it simply Völkenrode. “The Allies had never heard of it before,” wrote journalist Annie Jacobsen in her book *Operation Paperclip: The Secret Intelligence Program That Brought Nazi Scientists to America*. “It was an incredible find.”

The take from Operation Lusty went to Dayton, Ohio. Wright Field became the central hub for crated planes and boxes of documents arriving by train from New York. More than 16,200 separate items came in. One early task for the newly arrived Germans was sorting through the documents to compile a technical library.

Arnold ordered the Army Air Forces to keep at least one of every type of airplane flown by the enemy during the war. The overflow of parts and planes went first to Indiana and then to Davis-Monthan Field in Arizona. Ultimately, several Operation Lusty aircraft ended up in permanent museum collections of the Air Force and the Smithsonian.

W. E. Samuel in *American Raiders: The Race To Capture the Luftwaffe’s Secrets*.

The masterminds behind this chapter in airpower development were Maj. Gen. Hugh J. Knerr and Brig. Gen. George C. McDonald. Knerr had been a pioneering pilot of the B-10 bomber as well as a disciple of Billy Mitchell. Retired before World War II, he returned to Active Duty and by 1944 was deputy commanding general of US Strategic Air Forces in Europe. In that post, he’d urged his boss, Spaatz, to secure German technical sites. Knerr took over the Air Technical Service Command in the spring of 1945, giving him broad authority over all aspects of Operation Lusty.

McDonald was another adventurous pilot who’d set a world seaplane speed record in 1924 and now served as director of intelligence for the US Strategic Air Forces in Europe. McDonald later became chief of intelligence for the Air Staff. Together Knerr and McDonald spearheaded efforts to set up the structure for bringing the Luftwaffe’s spoils to the US, converting an airplane and document hunt into a sensitive recruiting operation.



USAF photo

The phenomenally fast, easy to maintain Me 262 was No. 1 on the list of German aircraft Americans sought. One US team rounded up propeller aircraft, another rounded up jets.

In occupied Germany, the man they put in charge was Col. Donald L. Putt, a pilot with degrees in electrical and aeronautical engineering who'd just finished a top-secret assignment to modify a B-29 to carry the atomic bomb. Now Putt was entrusted with creating an Air Force wishlist of scientists to bring to America, based on reports from the teams and contacts made in Europe.

Putt's first list comprised just five names: Ernest Schmidt, an engine developer; Adolf Busemann, an expert on compressibility and supersonics who was the Völkenrode's scientific director; Theodor W. Zobel, an aerodynamicist who photographed airflow around wings and turbine blades; Otto Lutz, an engineering officer, and Wolfgang Nöggerath, who developed rocket fuels and nitrous-oxide injection.

"In many fields," Putt reported, "the Germans were ahead of us ... from two to 15 years." As summarized by Samuel, it was Knerr who made the case. He petitioned Spaatz to "make full use of the established German technical facilities and personnel before they were destroyed or disorganized."

So great was the value of this technology that the plan for fast temporary exploitation evolved into a wholesale relocation of the German scientific and industrial establishment. Knerr realized early on that these men would do their best work under good conditions, with their dependents by their side. "Pride and face-saving have no place in na-

tional insurance," summed up Knerr in a letter to Spaatz. Besides, they didn't want these scientists ending up with the Russians—or with the British or even the US Navy, for that matter.

As the list grew, Putt placed the Germans in hotels. The paperwork for their Army contracts was laborious and gave rise to the new name for the effort: Operation Paperclip, so chosen because of the number of paper clips needed to hold together the copious scientist dossiers. Among other things, the US required certification that the incoming experts weren't Nazis. Most weren't, but postwar scholarship suggests the Office of Strategic Services in some cases whitewashed the records of a few that were.

Not everyone welcomed the Germans. Press reports stirred mixed reactions. Albert Einstein wrote to President Harry S. Truman in 1946, objecting to the project. In 1947 the Federation of American Scientists termed their presence "an affront" to those who'd fought the war.

The challenge for Knerr, Watson, Putt, and others at Wright Field was to integrate the Germans with the government research establishment and private industry. Capitalizing on their unique knowledge demanded clever management that would link the Germans with projects to which they could make a real contribution.

Rudolph Hermann, for example, had assisted von Braun's team in building a supersonic wind tunnel—a vital

ingredient in missile fin design and for later jet aircraft. Hermann worked first at Dayton, then in academia, and finally for NASA.

CONFIRMATION: IT WORKS

Unlike the cloistered von Braun team, the aeronautical experts needed to be integrated with USAF labs and aerospace industry. They brought fresh perspectives, technical problem-solving, and confidence with modern designs. The best of them advanced current projects and influenced younger generations of American engineers over careers lasting into the 1970s and beyond.

They naturally met some resistance. The German scientists were still enemy aliens to the State Department—and to some at Wright Field.

"I detected a certain reluctance by the labs to use the scientists," said Lloyd Wenzel, a P-38 pilot with 70 combat missions who'd been raised in a German-speaking community in Texas. Wenzel, a captain, was one of many dragooned into the mysterious Operation Paperclip under the sweeping orders from Spaatz.

Wenzel recalled in Samuel's book how attitudes changed when a wind tunnel at Wright Field was malfunctioning. Rudolph Gothert, a wind tunnel expert, examined it and soon had it working perfectly. "That really put us over the hump," said Wenzel.

Another quick benefit was confirmation that swept wings worked. Research on swept wings was a top secret project at Langley Field, Va. According to Samuel, a conversation between von Kármán and Busemann about swept-wing test data convinced Boeing Chief Aerodynamicist George S. Schairer the concept was sound.

At the top of the list of influential engineers was Hans J. P. von Ohain. In 1939, a Heinkel 178 took flight, powered by von Ohain's first-ever jet engine. He stayed in government employ until he retired in 1975 as chief scientist of the Aero Propulsion Laboratory and Wright-Patterson AFB. Along the way, von Ohain mentored a young Paul Bevilaqua, who went on to invent the Rolls-Royce lift fan that helps loft the short takeoff and vertical landing variant of today's F-35 fighter.

Some, like von Ohain, remained government employees while many

others gravitated toward academia. In other cases, industry was a better match. Werner von der Nuell was an expert on superchargers. Engine work was contracted out so von der Nuell was one of the first to move to an industry post in California.

By the spring of 1946, Wright Field began to allow contacts between industry and the German scientists. Curtiss-Wright was the first company to hold formal meetings with the ex-German scientists.

As a teenage boy, Alexander M. Lippisch saw Orville Wright fly at Tempelhof Field in Berlin. In 1931, Lippisch helped design the first delta wing aircraft and grew fascinated with tailless aircraft. At Messerschmitt, he was part of the design team for the rocket-powered Me 163 Komet, assisting with its first flight in 1941. Lippisch's proof of concept work on delta wings contributed to concepts for the Convair F-92, and later (and more successfully), to the F-102 Delta Dagger, the F-106 Delta Dart, and the B-58 Hustler.

Lippisch himself worked for Collins Radio in Iowa. His delta wing work was a classic example of how Operation Paperclip scientists speeded up US aeronautical efforts. The melding of ideas accelerated innovations in American companies and research labs.

"All of this, when analyzed and plugged into our US program, moved our research and development ahead rapidly by four-and-a-half to five years," concluded Operation Lusty's Watson in 1981.

No innovations were more dramatic in the Cold War than the transition from V-2 rockets to ICBMs and Saturn V boosters for the Apollo moon rocket program.

The Allies first combed the V-2 plant at Nordhausen. "I was told to remove as much material as I could, without making it obvious we had looted the place," Maj. James P. Hamill of US Army intelligence said, according to a NASA history book by Henry C. Dethloff. Some 300 boxcar-loads of material were shipped from Europe to Aberdeen Proving Ground, Md. The initial haul from Germany included 138 different types of missile designs.

Hamill also packed up 100 V-2 missiles for shipment to the United States.

Hardware and blueprints were "only a small part of what needed to be brought home," wrote Samuel. "What was much more important was to tap the minds of the innovative scientists who had come up with these ideas in the first place." The German scientists "were the real prizes of war."

The Allies knew who they were looking for. In March 1945, Britain's MI6 obtained a copy of the so-called Osenberg List of Germany's top scientists. Maj. Robert B. Staver of the US Army's Ordnance Corps scanned it and compiled his own roster of the most desired names in German science. Wernher von Braun was at the very top of the list.

But von Braun was on the move. His V-2 sites were slated to fall within the Soviet zone of occupation, and he knew it. Von Braun thus commandeered several vehicles to carry part of his team south from their Baltic Sea coastal research site into the depths of Bavaria, where they met advancing US troops.

Von Braun had good reason to run. In March 1944, the Gestapo had jailed him for two weeks. He'd provoked the SS by talking about how he'd rather be building space rockets. He was also leaving behind the slave labor conditions at the munitions factory Mittelwerk. He called it a "showplace of indescribable suffering," according to author Marsha Freeman.

TO THE MOON

After von Braun's brother, Magnus, talked to Schneikert, the Army private handed matters over to Lt. Charles Stewart of the 44th who gave the Germans passes through the American lines.

Von Braun was soon debriefed. "When the art of rockets is developed further," he told interrogators in 1945, "it will be possible to go to other planets, first of all to the moon." Von Braun also foresaw the "harnessing of atomic energy together with the development of rockets, the consequence of which cannot yet be fully predicted."

Late that summer, Washington approved dossiers of 127 Germans for contract work in the US. By year's end, 300 individuals were being processed.

The rocketeers had been speculating about a move to America for months.

Walter Wiesman had been hoping for such a chance. "My wife and I made

a decision even in '44, at least early '45, if we ever had a chance to get to America, that would be it," he recalled in a Smithsonian oral history project.

Little wonder. "Europe was a heap of ashes," recalled Samuel, who had lived in Berlin as a child and later wrote his definitive history of Operation Lusty.

Yet some felt trepidation, too. In a 1995 lecture, Ernst Stuhlinger wondered, "Could we hope that Americans would accept us as coworkers and take us at our face value, in spite of all the war propaganda that had painted a very different picture of the Germans?"

Fears of being dragged to the US—then being sent back to Germany—worried many on the list. A crucial turning point came when it was decided to guarantee long-term employment to those who settled in the US.

The initial group of six led by Wernher von Braun himself sailed to America in September 1945. They were held first at Fort Strong near Boston, then transferred to Aberdeen Proving Ground, where they processed the contents of those 300 boxcars. Von Braun's group then moved to Fort Bliss, Texas, and White Sands, N.M. In 1950 the group ultimately consolidated in Huntsville, Ala.

Von Braun went on to lead work on ballistic missiles and spaceflight rockets, eventually transferring to NASA.

And the captured V-2 rocket parts? Project Bumper began at the White Sands Missile Range in 1946, where the Army launched 64 V-2s after assembling the parts. Not to be outdone, the Navy launched one from the carrier USS *Midway*.

By 1953, 544 German scientists and engineers were at work in America due to Operation Paperclip. Ultimately, 516 became US citizens, as did 1,063 of their family members.

By the early 1960s, USAF was fully stocked with jet fighters, bombers, and transports and was fielding its first ICBMs.

In the 1960s, von Braun hosted a special guest for a rocket launch test in Huntsville. Hailing from Wisconsin, it was Fred Schneikert. ✪

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