Nine from Aberdeen

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DEDICATED TO COLONEL THOMAS J. KANE

AND ALL THE MEN WHO SERVED

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ACKNOWLEDGEMENTS

This publication began as my master's thesis at Western Carolina University in February 2003. Thinking back to those early days in graduate school, I can recall despairing over finding an "original" topic. Yet, I had entertained no plans to add to the vast body of World War II literature, even though my grandfather, Woodrow Leatherwood, had served with distinction as an infantryman in Europe. But, while re-watching one of my favorite British series, *Danger UXB*, two questions sprang to mind: had there been American bomb disposal squads during the war? And if so, were there any published materials on the subject?

As it turned out, the answers were yes and no respectively. Brief mentions in two official Ordnance histories, plus a few memoirs published in England were the only proofs that Americans had engaged in this perilous work on foreign shores. I sent a query to the Royal Engineers Association (REA). Their secretary at that time, Mr. Gary Woodman-Simmons, kindly sent a scanned color photograph of an American lieutenant, Ronald L. Felton, who wore a British bomb disposal patch on his U.S. Army uniform sleeve. From the REA's existing records, I soon learned that Felton had been one of nine Army ordnancemen sent to England in order to become our first bomb disposal instructors.

Sensing a marvelous story in the making, I proceeded onward with these nine names. However, a genealogical record search confirmed that the "Nine from Aberdeen," as I termed these pioneers, were no longer living. However, Command Sergeant Major James H. Clifford, Army EOD's top-ranking noncom, had just completed a short biographical essay on Colonel Thomas J. Kane for the Army Historical Foundation.

I contacted CSM Clifford shortly before his deployment to Afghanistan and Iraq, and found in him a worthy colleague with shared interests in military history. Over the months, we remained in contact, and upon his return to Fort Gillem, Georgia, Jim Clifford contributed a large portion of Kane's papers found within the 52nd EOD Army Group's archives. Since his retirement from service in 2005, Jim Clifford has served as a military consultant for *The Hurt Locker*. Whereas I only write about EOD history, Jim Clifford and his fellow soldiers have *lived* it.

I also pursued the Ron Felton story and located his two daughters, Sandra Font and Marsha Frost. Felton had passed away in 1993, but

Marsha has served as the "keeper of the flame," preserving her father's memory while promoting a sense of community among Felton's comrades and their wives. In autumn of 2003, Marsha and Larry Frost were my gracious hosts in Virginia during an important research visit to the U.S. Army's Ordnance Museum's special collection at Aberdeen Proving Ground. My indebtedness to Marsha cannot be expressed sufficiently, and I hope this book will justify her patient expectations.

Through Marsha Frost, I contacted two surviving members from her father's 12th Ordnance Bomb Disposal Squad. T/Sgt. James "Mac" McCluskey and T/5 Alfred "Al" Gardner were frequent telephone interviewees in 2003-04. Mac and Al also connected me with Dolores "Dee" Kramer, wife of the late T/Sgt. George G. Kramer, also from 12th Squad. Gardner's old friend, T/Sgt. Bob Kuehner (11th & 57th Squads), kindly shared his written reminiscences as well as out-of-print books.

Marsha Frost also introduced me to Joseph C. Pilcher Jr., a retired Army officer whose father traveled with hers to England in early 1942. While in Bristol, the elder Pilcher nearly lost his life while observing Royal Engineers tackling a German bomb. During his convalescence, Joseph forged a lifelong friendship with Felton, later standing as his best man. Pilcher came to witness terrible battles across France, Belgium, and Germany, but rarely discussed his wartime experiences. I would like to thank Joe and Leena for sharing the captain's precious scrapbook, as well as their continued friendship and encouragement. I am also grateful to Jesse Pilcher for sharing memories concerning his beloved older brother.

In the meantime, the Royal Engineers Association had put me in contact with Professor John P. Hudson and Major Thomas D. Sharman; two of the Royal Engineers responsible for establishing both the U.S. Army and Navy Bomb Disposal Schools, thus cementing our international EOD community. I would like to thank Tom Sharman and John Hudson, as well as other British correspondents who have offered their insights.

Apart from the REA, three other organizations aided my initial research in 2003-04. Thanks to a travel grant from Western Carolina University's Graduate School, I was able to visit Aberdeen Proving Ground's Ordnance Museum in October 2003. I would like to thank Dr. Peter Kindsvatter, Dr. William Atwater, and Mr. Tim Tidwell for granting access to rare files, including Col. Kane's bomb disposal journal. Aberdeen's archive holdings also include papers from Lt. Col. John E. Feldman, one of Kane's trusted officers and a founding member of the National EOD Association, the last group I would like to acknowledge at this time.

Lt. Col. Robert Leiendecker, a retired EOD officer, has served as the NATEODA's chief historian. He has encouraged many EOD lore seekers,

beginning with Sergeant First Class Samuel Hooper, who circulated his short EOD history back in 1981. Hooper, who is sadly no longer with us, blazed a trail for other researchers to follow. Back in 2003, Bob and Peg Leiendecker extended their kind hospitality while I researched through NATEODA's World War II document collection. "EOD Bob" has since remained in touch over the years, contributing answers to my technical questions or checking on proper dates. I would also like to thank Ron Felton Jr. for arranging my first meeting with the Leiendecker family.

Two senior NATEODA members, Henry "Bud" Englehardt and Fred J. Puckett, also served under Kane during his latter career in the 1950s. They shared their membership rolls, which allowed me to contact many other World War II disposaleers. At this point, I would also like to salute the late Lt. Col. Walter "Wally" Korsgard, as well as Captains W.G. "Scotty" Calder and Guenther "Gunner" Froebel. If I have neglected to mention any other NATEODA members who contributed to this long-term project, then I must apologize in advance for my oversight.

Through NATEODA's channels, I also exchanged calls and letters with Col. Kane's two daughters, Mary Jo Romba and Kay Levering. Through them, I learned at least two of the "Nine's" wives were still living in 2003-04. Dorothy Parsons and Alice Nass each gave their blessings to my endeavor, on behalf of their late husbands, Col. Frank Parsons and Lt. Col. Wally Nass. I should also like to recognize Maria W. Feldman, widow of Lt. Col. John E. Feldman, O.B.E., for sharing details about her husband's friendship with Kane. Sadly, Maria passed away in 2007.

Perhaps the most enigmatic member of the "Nine," Richard "Dick" Metress left no known children, and his wife, Anita, has vanished from the historical record. However, over the years, I have chipped away at the stone, aided by Dick's living relatives in New Jersey and Virginia. Dr. Patrick Metress, Dick's cousin, contributed general details about life in Pearl Ridge, while Carol Carlo, Metress' niece, provided some insights into their immediate family. Maybe, one day, we will know the full story.

I successfully defended my thesis in 2004, and my panelists; David Dorondo, James Lewis, and Gerald Schwartz, recommended expanding it into a full book. By that point, I had participated in the Barnes Club Conference at Temple University, where the late Russell F. Weigley offered some encouraging commentary. While at West Virginia University, Elizabeth Fones-Wolf encouraged me to write a seminar paper on Vietnam EOD, which may someday come to light. WVU also prepared me to become a well-rounded military history instructor. I would like to thank my history department mentors, especially Liz Fones-Wolf and Maj. Charles D. Dusch (presently at the USAF Academy) for this honor.

After completing my doctorate in 2009, I returned to this project anew. Having signed a publishing contract with Cambridge Scholars Publishing, I could spend more time developing my short chapters on North Africa and the Mediterranean Theater. At this point, I relied on Lt. Col. Richard W. Walkup, a career officer who had served in North Africa, Sicily, and Italy in the 235th BD Company before its reorganization into separate squads. I also solved the mysterious October 1943 disappearance of Walkup's commanding officer, Capt. F. H. Dillon. I would also like to thank Maj. Ed Dillon (USAF) for his insights about the Dillon family.

Bomb disposal in the Pacific Theater has proved the most challenging subtopic, owing to imperfect record-keeping and long distances between field units and headquarters. During the Aleutian Islands campaign, T/5 Clarence Fulcher endured Alaska williwaws and Japanese attacks as a bomb disposal technician. I would like to single out the whole Fulcher clan for sharing their stories with me. Before his death in 2010, T/5 Ernie Neeper happily discussed his island-hopping across the Southwest Pacific. In summer 2011, I contacted Ernie's squad commander, 1st Lt. Carmel "Carl" Cirocco, who helpfully cleared up my lingering questions regarding his mission on Luzon in the Philippines. I would like to thank Carl and Alex Cirocco for their kind support. I also would also like to salute Capt. George "Clifford" Sarauw's surviving relatives for sharing pictures and documents concerning his final mission in the Ryukyu Islands.

My book would never have bounded over its last hurdles in 2011 without the timely efforts of three fellow EOD historians. Jim Clifford has already received honorable mention, but I would like to thank him once again for contributing a thoughtful afterword on Kane's legacy. T. Dennis Reece, author of *Captains of Bomb Disposal*, selflessly loaned his Ordnance documents and photographs from his father's personal collection. Capt. Thomas R. Reece served with the Ninth U.S. Army Air Force, and his experiences have inspired me to incorporate the Air Force's bomb disposal history, broadening my original scope significantly. Lastly, I would like to recognize Mike R. Vining and Donna Ikenberry. Mike, a retired sergeant major, has devoted much of his time to obtaining and scanning historical documents and photographs related to EOD history.

And finally, to cut a lengthy acknowledgement short, I would like to credit my editors and publishers at Cambridge Scholars Publishing for their professional help on my first book. I would also like to thank the National Archives and Double Delta for several last-minute photographs. Finally, I would like to thank my wife, Jennifer Beck, for her support.

Jeffrey M. Leatherwood 3/31/2012

INTRODUCTION

Dating back to the Revolutionary War, the United States Army's Ordnance Corps has governed both arms and ammunition. Over the decades, Ordnance assumed responsibility for researching and designing new instruments for war. During the Twentieth century, the branch came to supervise the manufacture and issuance of military equipment in general. Naturally, in performing their duties, some ordnancemen habitually operated under battle conditions. Two government histories have dealt with the story of Ordnance in World War II. However, this book concerns just one very special Ordnance branch established in 1942. For the next three years, across every combat theater involving Americans, the U.S. Army Ordnance Bomb Disposal services disarmed, removed, and disposed of bombs, artillery shells, and other explosive hazards.[1]

Unexploded ordnance has always posed a hazard in modern warfare, especially after the introduction of artillery shells and landmines with timed fuzes. At first, delayed explosions arose from happenstance. During the Napoleonic Wars, "dud" artillery shells sometimes fizzled out, only to detonate moments later. During the American Civil War, explosive mines were refined by a Confederate officer, Col. Gabriel Rains, whose naval mines became known colloquially as "Rains Torpedoes." However, as the Confederacy crumbled in early 1865, Rains adapted floating mines for ground warfare. Confederate sappers quickly began sabotaging railroads, bridges, and river fords across Georgia and the Carolinas. That April, Union XIV Corps uncovered the first instances of camouflaged "subterra" mines, lurking under driftwood at Sister's Ferry, Georgia. Maj. Gen. J. C. Davis of XIV Corps viewed such tactics as proof of the embattled South's "low and mean spirit of warfare."[2]

During the Franco-Prussian War of 1870-71, German artillery shells and grenades sometimes failed to detonate, creating post-war problems for the French countryside. One period Fleet Street newspaper published *Rural Felicity a la Français*, a humorous anecdote detailing a Parisian gentleman's visit to his country cousin's war-torn estate. Quite alarmed by grim souvenirs from Germany's invasion, the Parisian nonetheless voted his kinsman's residence a fine place to fish for "dead Prussians and *unexploded bombs*." The author has emphasized these last two words.[3]

By World War I, unexploded bombs (UXBs) had become serious concerns, as early aircraft and dirigibles were developed for strategic bombing. Germany's bombers and zeppelins portended a new era over English skies. After several German bombs failed to detonate on impact, British Royal Engineers developed a "low-tech" system of sandbags and controlled detonations. In the trenches, meanwhile, untrained volunteers were often sent to remove ordnance, whether inert or hazardous. Just as the Great War ended in 1918, the Imperial German forces had begun using a variety of delayed-action bomb fuzes, a sign of darker times to come.[4]

The "London Blitz" of 1939-41 marked the origins of "bomb disposal." British authors have since published worthy accounts tracing its early stages of development. However, despite America's unquenchable thirst for World War II culture, U.S. filmmakers and scholars alike have overlooked nearly two thousand men who performed the same tasks for the United States Army. Whereas the British Royal Engineers have justly been immortalized in books, documentaries, television, and even the cinema, the U.S. Army's "disposaleers" are largely forgotten today, despite suffering 10 percent casualties in the European Theater (ETO) alone. Born seventy years ago, their obscure branch became a progenitor of today's Explosive Ordnance Disposal (EOD) services.[5]

Nine from Aberdeen presents a cross-section of Army (and Air Force) bomb disposal organizations, from their original conception for national defense to their introduction in all major combat theaters. This book covers a wide breadth of war experiences, but three hundred pages cannot hope to do full justice to the eight original bomb disposal companies, not to mention over two hundred "squads separate" serving across the globe. By highlighting some of the most audacious exploits of these bomb disposal men, I hope to challenge our concept of "war heroes."

Hollywood has long conditioned Americans – even its educated historians – to view World War II through recognizable icons and well-known archetypes, like hard-charging grunts or dashing fighter pilots. Crawling into a muddy shaft to disarm an unexploded bomb might lack the same visual appeal of a lone soldier storming a pillbox on some foreign beachhead. However, ordnance disposal requires a special kind of courage all its own. Since the continental United States never suffered a major bombing raid, citizens scarcely paid attention to their Army bomb disposal services. Domestic activities were mostly limited to instructing civil defense workers and law enforcement agencies. Therefore, most U.S. Army bomb disposal men, together with their brethren in the Navy, realized their fullest potential outside the country. This has continued to be true of EOD service members in all of America's latter-day conflicts.

By 1945, bomb disposal officers and their enlisted soldiers had gained reputations for coolness under fire. At their best, ordnance disposaleers combined the hardiness of infantrymen, the instincts of cavalry scouts, and ingenuity of combat engineers. Quite a number of disposaleers won Bronze and Silver Stars for valor or gallantry under fire, whilst others received Soldier's Medals for averting catastrophes in non-combat situations. Oftentimes, their tough jobs were made even more difficult by "friendly" ordnance, as the Allies began duplicating enemy methods, particularly with regards to delayed-action bombs and aerial mines.

* * *

Nine years in the writing, this book dovetails with *The Hurt Locker*'s controversial victory in the 2010 Academy Awards. Kathryn Bigelow's production professed to show typical EOD technicians in Iraq. Based on technical merits, *Locker* has some verisimilitude. CSM James Clifford, the film's military consultant, served thirty years in EOD. However, many EOD veterans took umbrage over the screenplay's overt characterization of ordnance disposal soldiers as "adrenaline junkies." In all fairness, Clifford later said of his Hollywood experience: "I did not participate in the filming or post-production efforts; I shared ideas but made no decisions." Despite its mixed reception, *The Hurt Locker* has injected EOD into the public consciousness. Now, the time has come for interested readers to assess the Army EOD branch's fascinating origins, peeling back layers of time and challenging popular misconceptions.[6]

Thus, if we reject such Hollywood stereotypes, how then do we explain the sort of man who specializes in such a thankless, hazardous field as ordnance disposal? Nearly all the Army's bomb disposal soldiers were white males, many hailing from industrial Northeastern states, such as New York, New Jersey, or Pennsylvania. But as media programmers should know, demographics alone cannot define a given group of people. Is it perhaps a question of religion? Overwhelmingly, most bomb disposal men belonged to recognizable faiths; Protestants, Catholics, even Jews. During World War II, there indeed were few "atheists in foxholes," or bomb-shafts, for that matter. One bomb squad officer, Edward J. Barry, once described what it was like "down there… looking at a damn bomb… wondering whether it's going to go off when you handle it… you hope *somebody's* looking over your shoulder." Nearer to the mark, perhaps, but as skeptics might point out with some veracity, many other soldiers confronted by danger have expressed similar feelings. So what makes these particular men so special?[7]

Based on their own words, I believe these ordnancemen were motivated by a desire to use their talents in the cause of victory. They were all volunteers who knew what they were getting into. Until Korea, they received no special hazard pay. Yet, they took pride in their work. Each disarmed bomb, every cleared airfield or beachhead represented a small victory. Cpl. Edward Furey (236th BD Company) took heart in doing something "worthwhile" in North Africa. After rendering safe a bombed Corsica airstrip within six hours, 1st Lt. Richard Hughes and his 57th BD Squad felt that they were "actually helping to win the war."[8]

Bill Mauldin, one of America's best-loved war correspondents, walked many of the same battlegrounds combed by Army bomb disposal men. Observing front-line combat soldiers, Mauldin described a "family complex" among such elite groups as infantrymen, paratroopers, and bomber crews. Dangerous professions such as these create tight-knit groups, who engage in all sorts of ribbing and kidding around. However, as Mauldin warned his readers, "no outsiders may join." Using similar terms, a wartime Ordnance magazine profiled its own "rugged breed," bomb disposal men. According to *Firepower*, disposaleers were "an exclusive set" that nevertheless treated "each other like newlyweds." While some soldiers proved their courage by killing their enemies, "bomb killers" showed their best quality when "playing checkers with death." As a historian, I feel strongly inclined to add Army bomb disposal squads to Mauldin's choice list of World War II fraternities, even if they have yet to receive their own *Band of Brothers* treatment.[9]

* * *

This book is chiefly a work of traditional military history, with a few nods toward its academic offspring, "war and society" and "war and memory." But it is not "just another World War II story." Simply put, *Nine from Aberdeen* addresses a long-overdue aspect of that great conflict. Apart from brief mentions in two post-war Ordnance Branch histories, very little coverage has emerged in existing histories concerning these elite specialists. Why is this so? Primary documents from the Ordnance Bomb Disposal School at Aberdeen Proving Ground indicate that the War Department did not fully comprehend the possibilities of bomb disposal, which they envisioned as a stateside defense force. However, unlike their British counterparts, American "disposaleers" mainly fulfilled their missions overseas, where they received less wartime coverage for saving lives. Secrecy also governed their technical operations, based on precedents of German espionage in Great Britain.

We can find other reasons for Bomb Disposal's near-obscurity from surviving unit histories and after-action reviews. In 1943, the Army began replacing cumbersome bomb disposal companies with seven-man teams called "squads separate." Such compact units were routinely overlooked by corps and army commanders, who often credited the Engineers for work done by ordnancemen. Lastly, when bomb squads were not chasing UXBs or retrieving enemy ordnance samples, they were often relegated to basic ordnance tasks, such as ammunition collection.

This writing will hopefully integrate the Army EOD story into military history at large. In World War II, ordnancemen followed the nine Principles of War as recognized by military scientists and most scholars of warfare. Such principles include the self-explanatory factors of Mass, Objective, Offensive, Surprise, Economy of Force, Maneuver (sometimes called Mobility), Security, Simplicity, and Unity of Command.

Thomas J. Kane, the United States Army's "founding father" of EOD, personified the concept of unity in command. There has never been much doubt as to Kane's centrality to the bomb disposal origin story. While still a major, Kane was selected by the Ordnance Department in 1941 to instruct civilians and soldiers in then-current bomb disposal methods. Kane's successes in the continental U.S. persuaded his superiors to place him in charge of an urgent training mission to England in January 1942. Kane then assumed the post of commandant of the new Ordnance Bomb Disposal School, where he recruited a "brain-trust" of innovative officers and promising NCOs based at Aberdeen Proving Ground. Promoted to full colonel by 1943, Kane also carried out important observation missions for the War Department, culminating with a globe-trotting inspection tour of the Middle and Far East. During subsequent visits to the United Kingdom, Kane developed close friendships among the British Royal Engineers, who acknowledged him as their trusted equal. In 1944, Kane reached his zenith as the European Theater's chief bomb disposal officer, answerable to Gen. Dwight D. Eisenhower.

Kane's original detachment, the eponymous *Nine from Aberdeen*, served as the Army Bomb Disposal School's first instructors, developing comprehensive training programs with assistance from their British allies. Using the principle of simplicity, stateside ordnance instructors reached a wide audience of civil defense workers, uniformed servicemen, as well as members of the general public. Later on, Kane's officers set up smaller overseas facilities in England, France, Italy, and even the Pacific Theater, where they instructed other servicemen in recognizing and alerting Ordnance to hazardous items. This new skill, bomb reconnaissance, proved to be a lifesaver in rear areas as well as the battlefront.

Bomb disposal and reconnaissance likewise contributed toward the military principle of security. UXBs and mines had a proven record of demoralizing the military and destabilizing civilian infrastructure. Honing their skills during stateside air raid drills, U.S. Army bomb technicians were noted for their cool reactions during ammunition explosions. Ordnancemen also removed UXBs and mines from rear areas, saving human lives, securing property, and preserving landmarks.

In 1942, the War Department envisioned the standard company as sufficient strength for stateside operations. However, when companies were sent overseas, they were deemed too unwieldy for field operations. In order to free up resources, the Ordnance Department embraced the concepts of maneuver and economy of force. Existing companies were phased out, and separate squads were developed to cover more ground with fewer men and vehicles. Aberdeen Proving Ground organized and trained 219 seven-man bomb squads for mobility and precision.

Three of Kane's original instructors led squads in each major theater of the war. In 1943, Capt. Ronald L. Felton of Pennsylvania deployed with his 12th BD Squad in the Mediterranean Theater. In 1944, Capt. Joseph C. Pilcher of New York led the 17th BD Squad across France, Germany, and Czechoslovakia. Capt. Richard E. Metress of New Jersey commanded the 209th BD Squad during the final Philippine Islands campaign of 1945. Their individual experiences comprise just a few among many instances of sacrifice, dedication, and outright heroism from the hundreds of Army bomb disposaleers who served during World War II.[10]

Usually, a squad deployed to a theater where they remained until the end. However, on a few rare occasions, bomb disposal units would redeploy to a different front of the war. In a modern conflict characterized by bureaucratic administration and large-scale troop movements, few remarked the passing of these seven-man ordnance disposal squads. While it is true that many "bomb killers" never exchanged shots with the enemy, they still performed a necessary and dangerous service to further the war effort. Kane's special ordnancemen enabled the Allied ground and air forces to achieve the goals of mass, offensive, and even surprise. Bomb disposaleers were always willing to provide close infantry support and even acted as auxiliary infantrymen at the "fluid front."[11]

However, "bomb disposal" soon became a misnomer, as aerial bombs represented but a tip of the proverbial iceberg. As a new service, Kane's graduates had to constantly demonstrate their usefulness. In North Africa, they cleared minefields, a task usually delegated to combat engineers. In Sicily and Italy, bomb disposal men searched enemy airfields and towns for booby traps, and participated in assault landings at Salerno and Anzio.

Disposaleers in the Mediterranean gathered intelligence on new Axis weaponry in time for D-Day. Prior to Normandy, bomb disposal men inn England briefed combat divisions on new German mines and explosives. Several squads took part in the first landings and the Allied breakout. Others scouted for V-1 rocket launch sites in the French countryside. By late 1944, Ernie Pyle noted relatively high casualties suffered by the bomb disposal squads since Normandy. Yet such losses were rivaled by those incurred in the Pacific Theater, where shortages of naval personnel often required the Army to fulfill missions without the benefit of specialized naval ordnance training.[12]

Nine from Aberdeen's opening chapter briefly addresses the wartime origins of bomb disposal in Great Britain, plus the mounting need for a similar program in the United States. Even so, Chapter One mainly focuses on the backgrounds and experiences of Kane's training mission to England. Chapter Two describes the U.S. Army's various military and civilian ordnance programs, as well as the Bomb Disposal School's role in preparedness for possible enemy bombardment. Characteristics of both enlisted and commissioned personnel are encapsulated. It likewise summarizes the training, equipage, and other aspects of the U.S. Army's bomb disposal units, who began departing for overseas duty by late 1942.

Chapter Three underscores the lack of bomb disposal support in the opening stages of Operation *Torch*, and the steps taken by Col. Thomas Kane and other Ordnance officers to redress imbalances in North Africa. By the time of Operation *Husky*, the Sicily campaign, bomb disposal units were available in sufficient quantities to make an impact on U.S. Army operations. Early missions in Tunisia and Sicily are narrated by members of two bomb disposal companies and several "orphaned" squads. Eventually, squads replaced companies as the preferred special unit.

Chapter Four picks up these threads with the "forgotten" Italian Campaign of 1943-45. On the peninsula, American disposaleers set a new benchmark by supporting amphibious landings at Salerno and Anzio. Several U.S. bomb squads helped to consolidate the British Eighth Army's advance in Southern Italy during late 1943. Owing to shortages of Royal Engineers, the Yanks were needed to clear Foggia's abandoned hangars and airstrips, which were laced with mines and UXBs. Led by Lt. Ronald "Jobe" Felton, 12th BD Squad safely deloused one of the area's largest airfields. They later received Bronze Stars. Foggia later provided significant air bases for Allied bombing raids against Hitler's precious oil fields in Romania. Thus, judicious use of bomb squads enabled the Allies to utilize both mass and offensive against Germany.[13]

Mediterranean-based ordnancemen collected intelligence and weaponry samples that foretold many dangers awaiting the Allies on beachheads in France. Chapter Four shows some rare insights into the daily routines of bomb disposal men at Sardinia and Corsica. While these two islands might sound uneventful, they were by no means inactive outposts. They experienced danger and hardship, as well as camaraderie and even romance. Some units even joined in the follow-up invasion of Southern France before rejoining their brethren in Northern Italy.

Chapters Five and Six cover the entire European Theater, from preparations for Normandy all the way to the Allied crossing of the Rhine. Col. Kane, having conducted two ordnance surveys for civilian and military readiness, went to England in early 1944. He brought with him a cadre of talented bomb disposal officers, including Capt. John E. Feldman, who collaborated with British technicians on the V-1 and V-2 rocket problems. Feldman, regarded as "Kane's Brains," developed portable tools for general Allied use, such as the "Flit-Gun" and the "Rocket Wrench."

Col. Kane went on to supervise a central bomb disposal headquarters, coordinating dozens of separate squads who supported Army and Air Force operations from D-Day to V-E Day. Kane also recognized the need for post-war ordnance removal in Western Europe. Following the liberation of France, he transformed the 234th Bomb Disposal Company into a bomb disposal school at Le Mans for the Free French military. Meanwhile, his field units continued to march alongside infantry, witnessing the Battle of the Bulge and the Roer River campaign.

Capt. Joseph Pilcher's 17th BD Squad shortly after D-Day, actively supporting two U.S. Army Corps during breakouts at St. Lo and Carentan. During the Paris campaign, Capt. Pilcher was awarded a Silver Star for defuzing and clearing an unexploded artillery shell at Vire River. Venturing under enemy fire in near-darkness, Joe Pilcher removed a hazard that would have impeded V Corps' river crossing. In February 1945, Pilcher supported another crossing: 78th Infantry Division's mission to capture Schwammenauel Dam, a strategic German structure controlling the flow of the Roer River. Allied commanders feared the dam might be destroyed, flooding the entire region. As key members of a "T-Section" responsible for removing any demolition charges, Pilcher and his cohorts assaulted the upper dam. They surprised the German defenders, who fought back with a vengeance. Though at least one of Pilcher's comrades suffered battle wounds, the remaining disposaleers ultimately killed or drove off most of the dam's garrison. However, because Capt. Pilcher's "T-Section" was attached to the 303rd Engineer Battalion, Ordnance received very little credit for their active part in this mission.[14]

Chapter Seven encompasses the Pacific Theater, from the first two companies dispatched to Hawaii and Guadalcanal, all the way to separate squads landing on Okinawa, the gateway to Japan. Unfortunately, this aspect of bomb disposal research has been challenged by missing documents and fragmentary accounts. Early on, the War Department's "Germany First" strategy forced the Pacific-based disposaleers to spread out across the theater's various departments. This chapter highlights one overlooked campaign, the Aleutian Islands, where some of America's first bomb disposal casualties occurred. Special emphasis is likewise given to MacArthur's Philippines Campaign, where more wartime information was kept by the 6th U.S. Army. Several bomb disposal squads performed errands of mercy for the Filipino people, later receiving citations from a grateful independent government. Japan's *Fu-Go* balloons, launched against the North American mainland, are briefly addressed in this chapter.

One of the notable units serving in the Philippines, the 209th Bomb Disposal Squad was one of the last commissioned for wartime duties. Capt. Richard "Dick" Metress, a former training officer at Aberdeen Proving Ground, volunteered to lead this new team rather than sit out the entire war in safety. Metress and his soldiers cut their teeth on Japanese ordnance in the devastated city of Manila. On the still-occupied Southern Philippine island of Mindanao, Dick's team later encountered Japanese depth charges being employed as landmines. Such booby-traps might be detonated by a trigger plate or set off by a Japanese engineer with access to a detonator switch. Despite a lack of training in naval ordnance, Dick Metress and his men bravely cleared the path for U.S. infantrymen during the final campaign in the Philippines. By July 1945, the U.S. Sixth Army managed to surround and capture most of the Japanese defenders on Mindanao, thanks to this courageous handful of ordnance soldiers.[15]

Chapter Eight wraps up the post-war reconstruction efforts in Germany and Japan, examining the relationships between the occupying American disposaleers and their wary neighbors. Both nations had trained bomb disposal technicians of their own. This book concludes with the fates of Col. Kane and his original companions from 1942, and how their legacy has shaped the founding of modern Explosive Ordnance Disposal.

Readers may note only passing mentions of Navy and Marine Corps bomb disposal units. This is not to downplay the contributions of either service branch. United States Army (and Air Force) bomb disposal squads performed a vast majority of ground ordnance operations in World War II, thereby providing the author with the broadest number of case examples. Navy sections were usually limited to ports and vessels, while Marines sent small contingents of disposaleers to the Pacific Theater alone.

Since World War II, "bomb disposal" has evolved to become today's American EOD branch, with overall training supervised by the Navy. Korea and Vietnam marked the modern EOD service's coming of age. Today, EOD removes conventional military explosives from active battlefields, provides national security against terror bombings, and fosters humanitarian goals through the United Nations, such as the U.N. Landmine Commission and other worthy initiatives.[16]

In 1969, Ordnance inducted Thomas J. Kane as one of its first Hall of Fame honorees, citing his fifteen years of leadership in war and peace. Tragically, Kane had passed away four years earlier, but his devoted officers continued to host veterans meetings well into the later decades. As recently as March 2004, the 52nd EOD Group dedicated Kane Hall at Ft. Gillem, Georgia, inviting the colonel's surviving daughters to officiate. When the 52nd EOD Group relocated to Ft. Campbell, Kentucky, they were forced to abandon the first Kane Hall in the wake of base closures. However, in early 2013, plans were announced for a new Kane Hall.[17]

Notes

[1] In World War II, Army Ordnance subsumes not only the ground forces, but also the U.S. Air Force, then under the Army's direction. For more detailed ordnance histories, see the following works: Constance Green M., Peter C. Root, and Harry C. Thomson, *The Ordnance Department: Planning Munitions for War*, Washington D.C.: Department of the Army, 1955; Lida Mayo, *The Ordnance Department: On Beachhead and Battlefront*, Washington D.C.: Department of Defense, 1991. (Charles G. Pritchard, "Ammunition Forward: the U.S. Ordnance Corps at Kunu-Ri, Korea." *Army Magazine*, March 2002).

[2] Maj. Gen. Jefferson C. Davis to Gen. William T. Sherman, 23 March 1865, from *War of the Rebellion*, Vol. 47a, Chap. 59, No. 62; See also Milton F. Perry, *Infernal Machines: the Story of Confederate Submarine and Mine Warfare* (Baton Rouge: Louisiana State University Press, 1965).

[3] "Rural Felicity a la Français," from *Judy, or the London Serio-comic Journal* (Fleet Street, London: Vol. 9, 23 August 1871, 181.)

[4] Paul Deichmann, "Luftwaffe Methods in the Selection of Offensive Weapons, Volume 1," from *USAF Historical Studies*, No. 187 (Manhattan, Kansas: MA/AH Publishing, Sunflower University Press, c. 1985), 5; Ernst A. Marquard, "Luftwaffe Methods in the Selection of Offensive Weapons, Volume 2," USAF *Historical Studies*, No. 187 (Manhattan, Kansas: MA/AH Publishing, Sunflower University Press, c. 1985), Appendix III.

[5] Out of 972 American bomb disposal officers and men actively serving in the European Theater, 111 were killed or seriously wounded during or immediately after World War II. At least 47 U.S. Army officers and technicians are listed on the U.S. EOD Memorial as official casualties, while many others are still awaiting

confirmation. At least fifteen of these soldiers were slain in the Pacific Theater; one of them lost onboard a sinking vessel torpedoed by the Japanese. Incidentally, though some casualties are still officially listed as "missing in action," no records verify BD personnel ever becoming prisoners of war. MIA statistics usually imply no human remains were actually found during or after the war. (Lida Mayo, *The Ordnance Department: On Beachhead and Battlefront*, Washington D.C.: Department of Defense, 1968, 348; Mike R. Vining, *Explosive Ordnance Disposal Memorial – U. S. Army*, EOD Memorial Commission, 9 April 2011; www.eodmemorial.org/army.html.)

[6] One retired Army EOD officer, Robert Leiendecker, criticized *The Hurt Locker* for both its technical flaws and misleading storyline. However, it may have inspired Rep. Ginny Browne-Waite (R-FL) to sponsor a U.S. House Resolution, H.R. 1294, in the 111th Congress. She proposed that the first Saturday in May should be recognized as the National EOD Day, recognizing this "noble and self-sacrificing profession." However, the actual anniversary for Army EOD is February 16, 1942, when the Ordnance Bomb Disposal School began service. (Colonel Olaf P. Winningstad to U.S. Army Ordnance School, memorandum, 19 January 1942; U.S. War Department to the Adjutant General, *Ordnance Training Center General Order #7*, 4 February 1942; *History of Bomb Disposal in the U.S.A*, Aberdeen Proving Ground, 1942, 1-3; Tom Sharman, letters to author, 8 August 2003, 26 August 2003; Kane, *Bomb Disposal School History*.)

[7] Edward J. Barry, interview conducted by G. Kurt Piehler and Shaun Illingworth in New Brunswick, New Jersey, on October 23, 1998, transcript by Shaun Illingworth, Edward J. Barry and Sandra Stewart Holyoak, Rutgers Oral History Archives of World War II.

[8] *Detonator*, newsletter, U.S. Army Bomb Disposal School: Aberdeen Proving Ground, Maryland; 17 September 1943; *Detonator*, newsletter, U.S. Army Bomb Disposal School: Aberdeen Proving Ground, Maryland, 22 October 1943; 57th Ordnance Bomb Disposal Squad (Separate), unit histories, February 1943 to June 1945.

[9] Bill Mauldin, *Bill Mauldin's Up Front,* New York: Henry Holt, 1945, 58; "Bomb Disposal," from *Firepower* (Washington D.C.: Army Ordnance Association, August- September 1945), 8-9.

[10] Pilcher and Felton's names were misprinted slightly in some official documents. This work reflects their proper middle names, and not the incorrect ones used in other ordnance histories. (Thomas J. Kane to U.S. War Department, *Bomb Disposal, U. S. A.*, [unpublished report] c.1942; Ordnance Bomb Disposal School Headquarters, *BD Officer Roster*, 26 November 1942; Ordnance Bomb Disposal School Headquarters, *BD Officer Roster*, 26 October 1943; Ordnance Bomb Disposal School Headquarters, *List of B.D. Officers Assigned to Companies & Staff*, 26 October 1943).

[11] Shortly before CSM James Clifford retired in 2005, the U.S. Army created the Combat Action Badge to recognize soldiers directly exposed to enemy attack in Afghanistan and Iraq. According to Clifford, "many higher level leaders were of the mind that you had to be shot at or get blown up by an IED to get the award."

Senior EOD leaders argued successfully for their branch's eligibility for this badge, reasoning that "an EOD soldier encountering UXO (unexploded ordnance) or IEDs (improvised explosive devices) is tantamount to any other soldier's contact with the enemy." Clifford went further, stating that "if an EOD soldier who successfully defeats an IED is not qualified for the Combat Action Badge, then neither is an American sniper who stealthily kills an enemy soldier." Several years afterward, Jim remarked: "While our soldiers were serving in Iraq and Afghanistan, we were fighting that battle for them back in the States." Clifford humbly credits his one-time commander, Col. Michael J. Davis (52nd Ordnance Group) for the closing arguments that secured this honor for EOD soldiers. (James Clifford, e-mail to author, 16 March 2011.)

[12] Ernie Pyle, "Ordnance Keeps Army in Trim," 10 August 1944.

[13] John Strawson, The *Italian Campaign*. (New York: Carroll & Graf Publishers, 1988), 136-7.

[14] Russell Weigley, one of America's premier military historians, based his account of Schwammenauel Dam upon these incomplete records. (Russell F. Weigley, *Eisenhower's Lieutenants* 603; Hooper, 20-1).

[15] Since World War II, all EOD service personnel have cross-trained in Navy and Air Force weaponry, to prevent future inter-service problems.

[16] The Department of Defense Humanitarian Mine Action provides EOD training for third-world nations like Vietnam, where unexploded ordnance continues to claim lives. In 2001 alone, the U.S. funded $81.8 million toward international programs. Nevertheless, the United States has yet to ratify the United Nations treaty banning antipersonnel mines. Moreover, the Bush and Obama administrations have resisted all international calls to cease manufacture and sales. The U.S. possesses the third largest stockpile in the world, remaining a major exporter of landmines. (http://www.icbl.org/lm/2002/appendices/unmas.html)

[17] Edward Brock, "Ordnance Group Gets New Hope," from *Clayton News Daily*. (Clayton, Georgia) 5 April 2004.

CHAPTER ONE

FIENDISH DEVICES

During the wintry first days of 1942, four British officers departed from Liverpool in a Norwegian freighter, escorting two crates of special equipment, cryptically marked "BDSE – PQ - NY." Their swift vessel, destined for New York City, went unescorted in order to avoid German "Wolfpacks" prowling the North Atlantic. After a lengthy undeclared naval war against marauding U-boats, the United States had finally entered the Second World War. Sixty years later, Thomas D. Sharman recollected an atmosphere of excitement in England after the news from Pearl Harbor: "It was obvious that America would come into the war." For the past year, Capt. Sharman had been stationed at Coventry, one of the hardest-hit cities during the London Blitz. Serving with distinction as executive officer for No. 9 Royal Engineer Bomb Disposal Company, Tom Sharman had traveled to London that December to receive his new duty assignment. He had brashly announced to his superiors: "I would like a posting to Hollywood!" Sharman later wrote: "Imagine my surprise when I was ordered to go to the U.S.A. to instruct them in Bomb Disposal." [1]

Tom Sharman already knew Maj. Geoffrey H. Yates, the Royal Engineer selected to head their secret training mission to the States. While a captain, Yates had commanded No. 2 Bomb Disposal Company in London's Balham district. Tom shared his cramped ship quarters with John Hudson, an affable scientist-turned-soldier that Sharman affectionately described as a "brilliant boffin." Capt. Hudson, who represented London's Unexploded Bomb Committee, was indeed a brilliant inventor, whose technical skills had saved the lives of many. Capt. John W. Draper rounded out this team of British bomb experts destined for the United States. They were known on both sides of "the pond" for their "outstanding records" in bomb disposal operations. On September 30, 1941, Maj. Yates and Capt. Sharman had both received the George Cross, a medal awarded for gallantry on the home front.[2]

Yates and his comrades were not only experts in their specialized field, but survivors as well. A newly commissioned lieutenant sent to command any given bomb disposal section in Great Britain had a life expectancy of

perhaps ten weeks. By late 1940, Royal Engineers bomb disposal personnel had sustained 123 deaths and 67 injuries related to German bombs. Now, four members of this elite brotherhood had been sent to impart their knowledge to their newest allies, the United States Army. T/Sgt. Bob Kuehner, one of their American trainees, never forgot his British instructors, who often told stories about fallen comrades who "paid the price so that we could learn from their experience." Sergeant First Class Sam Hooper, one of the Army's first ordnance disposal historians, later hailed these Britishers as "the forefathers of EOD as we know it."[3]

For the next seven months, Yates and Sharman helped to set up both the U.S. Army's and Navy's Bomb Disposal Schools, replicating much of the success achieved at Harper Barracks. The four Royal Engineers were accompanied by three enlisted men, known in British parlance as sappers. Meanwhile, nine U.S. Army ordnancemen would receive personal instruction in England from seasoned veterans of the "London Blitz." Thereafter, as qualified instructors themselves, Maj. Thomas J. Kane and his eight colleagues would return to Maryland, supervising a new Army school responsible for training eight special ordnance companies, over two hundred bomb disposal squads, plus thousands of civilian agents supervised by the Office of Civilian Defense (OCD). With the dawning of 1942, America would shortly become a major player in the "UXB War."[4]

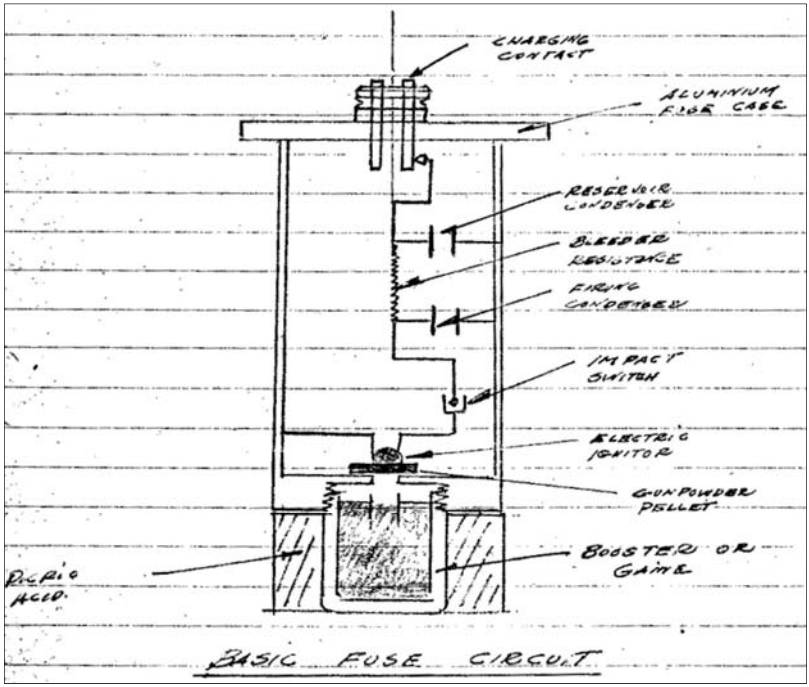
* * *

In a sense, Germany had commenced the "UXB War" as early as 1932, when an ambitious technical engineer, Herbert Erich Ruehlemann, brazenly patented his new ECR (Electrical Condenser Resistant) fuze designs in London. Ruehlemann's prospering corporation, Rheinmetall-Borsig, had gained some notoriety during the late 1920s for illegal weapons testing in Stalinist Russia, in violation of the Versailles Treaty. Ostensibly known for its calculators and typewriters, Rheinmetall subsequently became indispensable to the Nazi Party as a manufacturer of aerial weaponry. As the Nazi Party grew in power, Luftwaffe officers began placing greater emphasis on the development and testing of new aerial ordnance, including bombs, mines, and rockets.[5]

Despite a forced ban on German military aviation, Weimar attachés attended foreign air exhibitions, most notably England's Hendon Air Display and the Salon Aeronautique at Paris. Armed with schematics, German industrialists and military engineers secretly began to test planes and bombs in cooperation with the Stalinist government in Moscow. Gen. Paul Deichmann of Germany's II Air Corps later rationalized his nation's

rearmament program as a valid response to the growth of Poland after 1926. Deichmann argued that Germany had not considered going to war against Great Britain until the latter's own rearmament after the Sudetenland Crisis of 1938. Even so, Germany's longstanding desire for revenge over the humiliating Versailles Treaty is so well-established; Deichmann's post-war justifications should be taken with a grain of salt.[6]

While the Treaty's provisions "restricted" development of offensive air weapons, the small but active German military skirted compliance through funding private corporations. Businessmen such as Herbert Ruehlemann were natural converts to the Nazi Party, in complete control by 1934. Col. Leslie E. Simon, a U.S. Army ordnance researcher, later characterized pre-war German industries like Rheinmetall as duplicitous organizations who openly manufactured peacetime goods while quietly developing munitions and fuzes for the growing Nazi war machine.[7]



Standard German ECR bomb fuze circuit. (*Original Sketch by Walter Nass*)

During the Spanish Civil War (1936-39), Herbert Ruehlemann's technicians acted as "military advisors" to General Franco's divisions. Luftwaffe bombs incurred thousands of civilian deaths at Madrid, Guernica, and Barcelona. Germany's intervention gave Rheinmetall a chance to test their patented ECR clockwork fuze against live targets. Noting a timing malfunction in German bombs, Rheinmetall decided to exploit this ostensible mistake, refining the delayed-action principle in order to maximize panic and uncertainty. Ruehlemann's lethal discovery quickly won encouragement from none other than Hermann Göring, Hitler's chief confidante and head of the Luftwaffe. Over the years, Göring bankrolled Rheinmetall to design more unorthodox bomb fuzes.[8]

Under Nazi rule, German arms makers were subordinate to military control. Thus, Rheinmetall-Borsig fell under Göring's Head of Weapon Development; Engineer-General Ernst A. Marquard, who acted as liaison with Luftwaffe High Command. Herbert Ruehlemann enthusiastically paired his innovative fuze designs with Marquard's bomb prototypes, a partnership that would bedevil Germany's foes during the coming war. Several other German corporations also devoted their energies to fuze and bomb design, including the infamous I.G. Farben. Marquard answered directly to General Field Marshal Milch, who held dual offices as the Nazi Secretary of State and Chief of the Technical Office. Unlike his harmonious relationship with Ruehlemann, it seems Marquard frequently had clashes of opinion with the self-important Milch, a fact not lost on Marquard's colleague, Gen. Paul Deichmann.[9]

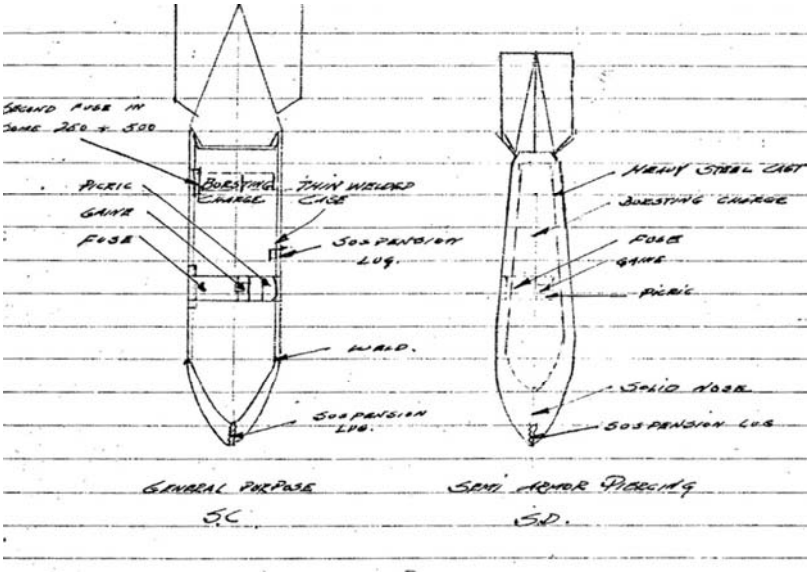
By 1939, delayed-action bomb fuzes had become a significant component of German air doctrine. While impact fuzes were initially designed for live targets, delay fuzes produced "maximum effect" against buildings. Gen. Deichmann described the overall purpose of delay fuzes: "to harass the enemy beyond the time of attack." Luftwaffe Service Regulation No. 16 went into further detail, citing "confusion and paralysis" resulting from the distribution of delay fuzes over "wide areas." Luftwaffe regulations further absolved every Luftwaffe officer, wing commander and downward, for employing such "special weapons."[10]

Deichmann also acknowledged the psychological impact of designing larger bombs, as well as more powerful bombers to deliver them. However, the most feared German bomber of 1939-40 was undoubtedly their smallest – the Ju 87 "Stuka" dive-bomber, which had special "Jericho Whistles" or "Trumpets" installed to create "infernal noises" when closing for the kill. Listed on the following page are bomb payload statistics for the Luftwaffe's chief workhorses during World War II.[11]

German Bombers of World War II	Limited Range (1939)	Full Range (1944)	Max. Load (c. 1944)
Dornier 17	2,200 lbs.	2,200 lbs.	4,400 lbs.
Heinkel 111	4,400 lbs.	4,400 lbs.	4,400 lbs.
Heinkel 177	never used	never used	12,000 lbs.
Junkers 87 "Stuka"	1,100 lbs.	3,300 lbs.	3,960 lbs.
Junkers 88	2,200 lbs.	4,400 lbs.	6,600 lbs.

When Hitler ordered the invasion of Poland, Marquard's division possessed six standard bomb designs, weighing anywhere from 2.2 kg (4.5 lbs.) to 1800 kg (4,000 lbs.). Three types were commonly used against the West; the SC (*Spreng Cylindrisch*), SD (*Spreng Dickenwand*), and PC (*Panzerdurchschlag*) bombs. SC bombs were general purpose projectiles, built with thin steel walls for high-speed payload delivery. Early SC models suffered from poor ballistics. SD bombs were thicker-walled and streamlined for precision attacks against lightly armored and solid concrete targets. As their German descriptor implies, PC bombs were mainly directed against heavily-armored targets, such as tanks or ships. Such aerial weapons were further divided according to their tactical uses: *general-purpose* bombs against normal structures; *armor-piercing* projectiles against heavily-reinforced structures; *incendiary* charges against inflammable or combustible targets; *anti-personnel* mines and fragmentation bombs to inflict civilian casualties and to otherwise demoralize the enemy's rear-echelons.[12]

Most German bombs were painted sky blue, with different color markings to help Luftwaffe personnel identify their own ordnance. During the "UXB War," these cryptic German symbols became recognition aids to the Royal Engineers. British sappers even developed cheeky nicknames for nearly every bomb they encountered. Germany's largest general-purpose bomb, a behemoth weighing two tons, became known as a "Satan," while another 1,000 kg model was dubbed a "Herman," as it reminded some of Air Marshal Göring's corpulent profile. Semi-armor piercing bombs of comparable sizes and weights were given such code-names as "Esau" and "Fritz." After 1941, American ordnance specialists adopted the same terminology to describe German bombs, which greatly aided cooperation with Royal Engineers in the field.[13]



Cross-sections of two basic German bomb designs, the SC (general purpose) and SD (semi-armor piercing). (*Original Sketch by Walter Nass*)

Color Coding of Luftwaffe Bombs[14]	**Purpose or effect of Luftwaffe Bombs**
Red Ring x1	Flash Bombs
Red Ring x2	Intensive Incendiary
Red Stripe	Fragmentation / General Purpose
Yellow Stripe	High Explosive
Yellow Stripe x2	Major Charge
Blue Stripe	Armor Piercing