

CHAPTER 4

RAPID RESPONSE: DISASTER RELIEF AND RECOVERY

III Winds: Hurricanes Camille and Agnes

For more than a century, victims of hurricanes have looked to the Army Engineers for crucial aid. Corps rescue work on the Gulf of Mexico dates back to 1875, when its workers at Galveston manned boats to save storm victims caught in raging waters off Fort Point. Engineer planning dates to 1900, when retired Chief of Engineers Brigadier General Henry M. Robert gave Galveston its first protection plan. Enactment in 1950 of a federal disaster relief program brought the Corps heavy responsibilities but also demonstrated the fitness of the traditional Engineer organization to cope with new tasks.

On 17 August 1969 Hurricane Camille crossed the Mississippi coast with winds of 201 miles per hour and a surge some 24 feet above sea level. In its path steel and concrete buildings, venerable homes, and deep-rooted oaks were simply obliterated. As the storm passed, Engineers swung into action. The New Orleans District did superb work south of the city and also assisted the Mobile District that was responsible for most of the work along the Gulf coast and inland. Mobile District officials sent civilian contractors into the devastated areas to clear roads. Engineer troops from Fort Benning, Navy Seabees, and Airmen from Keesler Air Force Base joined in. Aided by these forces, the District removed rubble, recovered bodies, cleared trees, freed 14,000 residential lots of debris for rebuilding, and dredged 12 million cubic yards of shoaling from Gulf harbors.

Hurricane Agnes was one of the most devastating storms to hit the nation's eastern seaboard in the 20th Century. Between 14 and 23 June 1972 more than 100 died as torrential rains and floods swept away homes, farms, and businesses. Property damage totalled over \$3 billion. The Susquehanna, Shenandoah, and Potomac Rivers topped their banks. Wilkes-Barre was engulfed. The Baltimore District at once responded, dispatching survey and rescue teams to aid the beleaguered city. As recovery work got under way, 14 disaster

area offices were set up in a hard-hit four-state region. Soon workers with buttons proclaiming that “The Corps Cares” seemed to be almost everywhere. At the suggestion of Major General Richard H. Groves, North Atlantic Division Engineer, the Chief of Engineers set up a new district to handle disaster relief. In a busy three-month life-span the Susquehanna District cleared debris, housed refugees, repaired homes, and helped to make the battered region livable once again.

In both crises, the Corps demonstrated its ability to mold military and civil elements—its own personnel, contractors, troops—into a unified force working for recovery. Military discipline insured speed of response. Decentralization aided the Districts’ intimate knowledge of local problems and local contractors’ capabilities. Decisions were made quickly. The nationwide Corps organization formed a pool of talent from which overburdened Districts could and did draw help. Flexibility, training, speed, unity—these factors in the course of 100 years made the Engineers an essential part of the nation’s response to the ruin caused by hurricanes.

Albert E. Cowdrey and Harold K. Kanarek

Source: (1) New Orleans, Mobile, Galveston, Baltimore, and Susquehanna District histories. (2) Lucile T. Barrett, and Edward Sanchez, “Camille and the Engineers,” *The Military Engineer*, 61 (1969), 407 -409.

The Great Upheaval: the Alaskan Earthquake, 1964

The response of the U.S. Army Corps of Engineers to the Alaskan earthquake of 1964 was prompt and positive. On Good Friday afternoon, 27 March, a violent earthquake rocked 50,000 square miles of south-central Alaska. The intensity of the shock measured between 8.4 and 8.6 on the Richter scale, releasing twice as much energy as the quake that destroyed San Francisco in 1906. Only the low density of the state’s population and the hour—5:35 p.m.—when schools were empty, business areas uncrowded, and tides low—prevented the death toll from exceeding 114. Property damage totaled more than \$500 million. In downtown Anchorage the upheaval leveled the unfinished Four Seasons apartment building and two parking garages. An elementary school and several houses slid into Ship Creek Valley, settling on top of an Alaska Railroad warehouse. Businesses on three blocks of 4th Avenue sank 10 to 20 feet into the earth.

At nearby Seward, which was getting ready to celebrate its selection as an All-American city, floods destroyed the industrial areas and the port, including the southern terminus of the Alaska Rail-

road. Tidal waves also obliterated other ports along Alaska's southern coast. At Kodiak, a wave lifted the crab fishing fleet out of the harbor and carried the boats through the town. Canneries on the waterfront disappeared.

The Corps of Engineers, in association with the Office of Emergency Planning, moved quickly to help communities in distress. Though many of their homes were in ruins, employees of the Corps' Alaska District reported for duty immediately. Less than 10 hours after the calamity, Alaska District Engineer Colonel Kenneth T. Sawyer sent emergency teams in light aircraft to assess the damage. Within the next few days Colonel Sawyer established special project offices at Anchorage, Valdez, and Seward to administer contracts for debris clearance, demolition, and repairs to sewers, water supplies, communications, and power distribution systems. Chief of Engineers Lieutenant General Walter K. Wilson, Jr., organized an emergency disaster team of 65 engineers from the Walla Walla, Seattle, and Portland Districts to assist in the rebuilding program. Retired Engineer Brigadier General Benjamin B. Talley, who had experience in military construction in Alaska during World War II, did much of the restoration design as a contractor with a private engineering firm.

The first priorities were reopening highways and reestablishing essential water and fuel supplies. Toward these goals, the Alaska District let contracts quickly. Merely clearing roadways was an enormous task. As one bulldozer operator reported, "It took us twelve hours to cut through the biggest slide, and when we got through there was another just ahead." In Anchorage alone reconstruction expenditures averaged \$1 million a month for the first year after the disaster. Racing against the calendar, the Corps managed to complete most important repairs before the Alaskan winter arrived. In addition, the Alaska District channeled most of the restoration work to hard-hit local businesses, providing employment to residents whose livelihoods had been disrupted.

Altogether the Corps spent over \$110 million on salvage, rescue, and rehabilitation operations in Alaska. Once again the Corps had moved efficiently and quickly to assist people in desperate circumstances. To the earthquake victims the code name for the relief effort—"Operation Helping Hand"—seemed apt.

Harold K. Kanarek

Source: (1) "The Alaska Earthquake," *The Military Engineer*, 46 (July - August 1964), 246 - 50. (2) Federal Reconstruction and Development Planning Commission for Alaska, *Response to Disaster: Alaskan Earthquake, March 27, 1964* (Washington, D.C., 1964). (3) W. A. Jacobs, *The Alaska District of the Corps of Engineers, 1946 - 1974* (Elmendorf Air Force Base, Alaska, 1976), 97 - 104.

The Benefits of Military Training: Colonel Eugene Reybold and the 1937 Flood

During the 1937 floods on the Ohio and Mississippi Rivers, Lt. Col. Eugene Reybold, District Engineer at Memphis, used his military expertise to combat the record high waters. Reybold's district embraced the Mississippi and its tributaries from Cairo, Illinois, to the mouth of the Arkansas River. In January rain equal to half the normal annual precipitation fell on the Ohio Valley, causing record floods at every point on the Ohio River, and sending raging waters rushing down the Mississippi. The ground was frozen and the runoff rapid. The waters threatened Cairo and the valley below.

After many sleepless hours, Reybold drew upon his training at the Command and General Staff School and the War College to deal with the situation. He wrote an estimate of the emergency and organized a defensive position against the unpredictable and treacherous enemy. He called upon the St. Louis and Kansas City districts for boats equipped with radios and drew experienced flood fighters from all districts. The Commanding General of the 4th Corps Area in Atlanta supplemented the floating radio network with Army Signal Corps units equipped with field radios and telephones. Reybold had communications available for practically every mile of main levee in his District. Finally, he set up Red Cross Headquarters in Memphis to take care of the anticipated flood refugees.

From his command post in the District Office in Memphis, Reybold directed his forces against the approaching enemy. With accurate information available to him instantly, he was able to open the New Madrid Floodway with dynamite at just the right time, saving Cairo from devastation. There were many dark moments, but Reybold promptly learned of each and every weakness in the levees and quickly had them reinforced. "My military training," he later observed, "and similar training of countless Engineer Officers sent to my assistance had a lot to do with the safe passage of the greatest flood the lower Mississippi Valley ever experienced."

Harold K. Kanarek

Source: Ltr, Lieutenant General Eugene Reybold to Chief of Engineers, Major General Lewis A. Pick, 22 Dec. 1949, in The Chief of Engineers' Memorandum to the Secretary of the Army on the Hoover Commission Proposal to Transfer Civil Works from the Corps of Engineers (10 January 1950), 4.

“A Globe of Compression”: Brigadier General Joseph G. Swift and the New York Fire of 1835

Beginning with the Johnstown Flood in 1889, the Army Corps of Engineers has had an official role in aiding victims of natural disasters. But long before the Corps as an organization rendered such service, Army Engineers as individuals lent a helping hand to fellow citizens in times of trouble. An early example of the Engineer as good Samaritan was provided by Brigadier General Joseph G. Swift, former Chief Engineer of the Army, during the great New York fire of 1835.

Fire broke out in lower Manhattan on 16 December of that year. Spreading rapidly, it soon swept the first ward, east of Broadway and below Wall Street, consuming houses, stores, the Merchants' Exchange, and the old South Dutch Church. The longer the fire burned, the more it grew and intensified. Firefighters were powerless to stop the blaze which threatened to devour the entire city.

Alarmed and desperate, officials turned to General Swift, a municipal hero since 1814, when he directed the city's defense against threatened British attack. At the time of the fire, Swift was retired from the Army and working as a civilian on harbor improvements for the Corps. When the mayor appealed to him to stop the flames from spreading, Swift proceeded to contain the blaze behind a line of demolished buildings. First he calculated how much gun powder would be needed to “shake down” a house without damaging neighboring properties. Then he directed the placing of the charges in such a way as to create “a globe of compression” when ignited. As the powder went off, walls toppled inward and houses collapsed in ruins upon themselves, leaving adjacent structures unharmed. A novelty at the time, this technique is now common practice in the urban demolition business.

At great personal risk, Swift set off charge after charge, arresting the fire's advance on 17 December and thus saving countless lives and millions of dollars in property. For the second time in two decades, he received the city's official thanks. And within a few months after the fire, Swift—ever the Engineer—was busy with plans for replacing the burned-out buildings with up-to-date fireproof structures.

Charles E. Walker

Source: (1) Joseph Gardner Swift, *Memoirs* (Worcester, Massachusetts: F. S. Blanchard & Co., 1890), 222, 270. (2) “New York,” *Harper's Encyclopedia of United States History* (New York: Harper & Brothers Publishers, 1901), VI, 423 - 24.

Texas City Explosion

On the morning of 16 April 1947, the earth shook at Texas City, Texas. Shortly after 9:00 a.m., the cargo ship *Grandcamp* containing 2,400 tons of ammonium nitrate exploded killing almost the entire forty-man crew. The blast was so intense that vibrations were felt sixty-five miles away. Fires and explosions erupted throughout the grounds of the Monsanto Chemical Company. The heat from the fires then spread destruction all along the Texas City waterfront. Sixteen hours after the initial blast, a second ship loaded with ammonium nitrate, the *High Flyer*, exploded adding to the nightmare. In twenty-four hours, over 500 people had died and as many as three or four thousand more were injured.

Immediately after the first explosion, the Galveston District of the Corps of Engineers was on the scene coordinating relief operations. Galveston District Engineer Colonel D. W. Griffiths personally traveled to Texas City by boat and organized the rescue mission from City Hall. The first task was to get the fires under control and to evacuate the area. During the frenzy of activity, Corps personnel helped remove the dead and injured, drove emergency vehicles, set up kitchens for fire fighters, patrolled the water, and maintained an emergency radio communication network. Colonel Griffiths, recognizing the magnitude of the catastrophe, asked the Commanding General of the Fourth Army at Fort Crockett, General Jonathan M. Wainwright, for reinforcements. Fourth Army responded rapidly and worked with the Galveston District, local authorities, and the Red Cross to supply food and medicine and clean up the debris.

Once again the Army Engineers were prepared to meet a catastrophe of unparalleled magnitude. The Corps experience in flood relief and in wartime operations served the engineers well during this unique emergency. Though the disaster produced massive confusion, the Army Engineers with its decentralized organization effectively helped coordinate efforts to meet the needs of the victims of the Texas City harbor industrial fire. In the aftermath, the Engineers worked for many months cleaning up the waterway and harbor.

Harold K. Kanarek

Source: Lynn M. Alperin, *Custodians of the Coast: History of the United States Army Engineers at Galveston*, 254 - 57.