

THE MOBILE DISTRICT MEETS CRISIS: HURRICANE CAMILLE

Hurricane Camille struck the Gulf Coast 17-18 August 1969, resulting in mass destruction and the greatest relief and rehabilitation program in the history of the United States up to that time. It also presented the Mobile District with the most serious peacetime challenge of its history. The District was called upon to render services and perform tasks under emergency conditions similar to those created by the World War II and Korean conflict crisis. It afforded an opportunity for the organization to demonstrate its capabilities and effectiveness when called upon to function under pressure.

In spite of warnings and massive evacuation, Camille resulted in the death of 137 persons in Mississippi and 9 in Louisiana, and 27 persons were reported missing. Public property losses were estimated to have been \$210,000,000 and private property at over a billion dollars. This included the destruction of over 5,500 dwellings with damage to many times that number. Over 650 small businesses were destroyed, resulting in loss of employment, business income, and tax revenue. Total destruction was almost beyond comprehension when considered in all its ramifications.

The scope and intensity of the storm exceeded that of any ever to have hit the continental United States. The overall destructive force exceeded that of the tornado which roamed across Missouri, Illinois, and Indiana on 14 March 1925. That storm cut a path about 220 miles long and up to a mile wide. It sped across the landscape at 60 miles per hour. The cloud above it, the *mother cloud*, was so low and the funnel was so wide that it was described as a "turbulent, boiling mass of blackness". It killed 689 people in all, including 234 persons in one community, Murphysboro, Illinois. Destruction would have been much greater had much of the path of the storm not been through rural areas.

Camille hit the populous Louisiana, Mississippi, and Alabama Gulf Coast. Destruction

of life would have numbered in the thousands had it not been for warnings and adequate time to evacuate. It was first detected on 14 August 1969 about 60 miles west of Grand Cayman Island, some 480 miles south of Miami, when only a tropical wave. It developed rapidly and by early morning 15 August, it had reached hurricane intensity. By that afternoon the winds had reached a velocity of 115 miles per hour. It was moving in a northwesterly direction 6 to 7 miles per hour. The trek across Cuba weakened the hurricane only slightly and once over the open Gulf of Mexico it began gaining strength. Its forward movement increased to about 10 miles per hour. Early on 16 August, a hurricane watch was posted from Biloxi, Mississippi, to St. Marks, Florida. Hurricane warnings were issued for the Florida coast from St. Marks to Fort Walton.

The movement of the storm slowed in the afternoon of 16 August, but the velocity increased. A reconnaissance aircraft indicated that maximum winds were an estimated 150 miles per hour near the center, which was located 380 miles south of Fort Walton, Florida. Hurricane warnings were issued from Fort Walton to Biloxi, Mississippi. Early next morning the storm was about 250 miles south of Mobile, Alabama, and was moving north-northwesterly at 12 miles per hour. Winds near the center were 160 miles per hour. By late afternoon they reached 190 miles per hour.

The hurricane moved inland at the Waveland-Bay Saint Louis, Mississippi, area near midnight 17-18 August with gusts of wind estimated at up to near 200 miles per hour near the center.¹ Gusts up to 75 miles per hour extended eastward along the coast to Mobile Bay and inland to just south of Jackson, Mississippi. The eye of the storm at landfall was about 12 miles diameter and crossed directly over the town of Waveland, Mississippi, at a speed of 15 miles per hour. The tidal surge reached an unprecedented height of 22.6 feet above mean sea level at

Pass Christian and was 6 feet as far east as Gulf Shores, Alabama.

The eye of the storm moved across Mississippi, passing within a few miles of Columbia. The maximum recorded wind speed there occurred at 2:55 a.m. (C.D.T.) on 18 August and reached 120 miles per hour with gusts up to 135 miles per hour. The wind instrument tower collapsed at that time, so no official record exists thereafter. An observer described the storm's fury. Limbs were breaking from trees, large trees were falling, and the streets were covered with debris, many being blocked by fallen trees.²

Destruction in the path of the center of the storm at landfall was virtually complete. The hurricane winds (speeds greater than 75 miles per hour) extended from New Orleans to Pascagoula. Extensive damage occurred from New Orleans to Pascagoula with less serious destruction extending into West Florida and as far inland as Jackson, Mississippi.

The Mobile District Corps of Engineers began to take official action concerning Camille as early as 14 August 1969. When the U.S. Weather Bureau advisory No. 1 was received, close observation of the path of the storm and its potential to develop into a hurricane was commenced. The path of the storm was plotted and its rate of progress computed. Phase I of the Mobile District hurricane plan was initiated. All floating plant were notified and work schedules reviewed. Protective plans and emergency equipment were rechecked for readiness and reliability and all contractors engaged in work for the Corps of Engineers were informed of the direction and potential of the storm.³

Advisories issued on 16 August indicated that Camille would probably go inland somewhere in the Mobile District. Phases II required that constant communication between the District and the area offices be maintained. This was accomplished by means of the District's radio net, which enabled the District, Area Offices, and floating plants to keep in constant touch. All inactive floating plant was moved to pre-selected mooring

areas for safety and standby watches were set up. Emergency power supplies were checked to assure proper operation if needed.

Phase II was initiated by ordering all Government-owned floating plant and appurtenant equipment be moved to safe harbors. All contractor-owned equipment was released to seek refuge from the storm. On 17 August a 24-hour watch was established for certain designed elements in the District office and in the coastal area offices. By noon of the 17, all floating plant and equipment had been safely moored. Plans were drafted to have teams move into the storm area after the storm moved inland.

An emergency operations center was established at 7:00 A.M. (C.D.T.) 18 August after the storm center passed landfall from which eleven survey teams were dispatched. They were instructed to inspect the damaged areas and report on damages and needs for assistance. An inspection and photographic mission was also made by helicopter. The survey revealed that there had been little damage east of Mobile, but destruction became progressively worse west of Mobile to Waveland, Mississippi. The ground survey teams could hardly move around because of obstructing debris in every highway, street, and waterway. The helicopter survey team got the first view of the massive nature of the destruction.

Beginning at Pascagoula, much beach front property had been destroyed. It became progressively worse and from Gulfport to the Louisiana line, one could travel west along Highway 90 for several miles and not find one house left standing. The beach front for about two blocks inland had been swept almost completely clean of all buildings. The eastbound lane of Highway 90 was destroyed for long strips in many places. Massive concrete deck slabs of bridges had been displaced. In some instances they were lifted and deposited on the edges of the slabs of the opposite lane. Tracks and ties were washed from the railroad bridge over St. Louis Bay, and tracks and bridges were damaged or destroyed in many other locations. Harbors, port facilities and breakwater structures were destroyed or heavily

damaged. The merchant vessels, *The Hulda*, *Silver Hawk*, and *Alamo Victory*, were grounded at Gulfport, and a large barge was beached on Highway 90. All communication facilities were out and all utilities destroyed over the area. The loss of life would have been staggering had it not been for a massive and successful evacuation effort.

By the time Camille reached landfall, evacuation of the lower portions of Plaquemine and St. Bernard Parishes in Louisiana was almost 100 per cent complete. The beach front area of Mississippi and Alabama was over 90 per cent evacuated. Residents of low-lying and exposed areas sought refuge in about 263 shelters in 25 counties and parishes in Alabama, Mississippi, and Louisiana. Many others sought protection with friends and relatives who lived inland. Still others moved to commercial lodging in protected areas. An estimated 200,000 persons sought refuge from Camille. What could have happened to many of those evacuees is grimly portrayed by the experience of the Richelieu Apartments party at Pass Christian. There 23 persons refused to leave, preferring rather to sit the storm out. The apartment complex was completely destroyed and only 3 of the party survived. Modern communications making warnings adequate and modern transportation facilities making evacuation possible saved scores of lives.

Before noon of the morning following the storm, many agencies and volunteer groups were entering the distressed area to aid the thousands whose homes had been destroyed or damaged. Those were expanded until over 25 Federal agencies were included, with several organizations within some of those agencies participating. The Department of Defense is a good example. Organizations from that department included the Army, Air Force, and the Navy and Marine Corps. In addition, the American Red Cross and many other public and private bodies assisted. Only the work of the U. S. Army Corps of Engineers is included in this presentation.

The Mobile District became involved in the recovery program first under the Corps' continuing statutory authorities, and then at

the request of the Office of Emergency Preparedness. The Corps had extensive authorities under which rehabilitation work was accomplished under Public Law 99, 84th Congress, and Section 3 of the River and Harbor Act of 1945. There were also various project authorizations under which regular operation and maintenance work was carried out. The Office of Emergency Preparedness (OEP) requested Corps assistance under Public Law 875, 81st Congress, which authorizes Federal assistance to states and local governments in major disasters. Later authority was expanded under Public Law 79, 91st Congress, passed six weeks after Hurricane Camille. This law authorized emergency relief to private citizens who suffered losses from the storm.⁴

Commitments under continuing Corps authorities called for the restoration of all Federal navigation projects to pre-hurricane conditions, repair of the Harrison County, Mississippi, seawall, and various surveys and inspections. This included restoration of all the coastal project channels which had been damaged. All those from Perdido Pass near the Alabama-Florida line to Pearl River, Louisiana, were heavily shoaled and clogged with debris. There were many wrecks which obstructed the channels. This was a monumental task within itself, and ultimately resulted in a \$4,000,000 expenditure. It was completely overshadowed, however, by the recovery assignments from OEP.

The first task was an evaluation of damages. Survey teams covered the affected territory within the Mobile District, making comprehensive studies of the flooded areas. Effort was made to determine all damage sustained by both real and personal property and economic losses to commercial and industrial concerns. Then effort was made to evaluate the cost of relief and rehabilitation. It was difficult to determine damages in many instances, since nothing was left upon which to base estimates. Often all that remained was a vacant lot with even traces of foundations vague or gone completely. Tax assessors records were utilized when practicable, but they often did not reflect fair market value. Street to street surveys were made in the flooded area, and every effort

was made to arrive at value of property damaged or lost.

The survey revealed that the destruction was almost complete for some three or four blocks inland along the entire 75-mile Mississippi Gulf Coast. Residences, motels, apartments, restaurants, and other structures were reduced to rubble and swept into great heaps of scrap lumber and masonry along with fallen trees, ruined automobiles, and grounded boats. Over 3,800 homes were completely swept away along this strip and 16,000 suffered severe damage. In low areas residential sections were flooded as much as 15 feet deep.

The total effect was dramatic and eerie. At a season when the Gulf Coast is normally green and lush, trees had been stripped of all leaves. Most small terminal twigs had been stripped as well and many large branches were broken. Many large trees, especially pines, were broken many feet above the ground and looked as if they had been twisted by some giant hand. Some trees were even stripped of their bark. Replacing the foliage in the trees were bits of clothing, spreads, sheets, and other household items deposited there by wind and flood. Streets were completely impassable.

Before any significant rehabilitation could be accomplished, it was necessary to clear the streets and utility rights-of-way and restore power, water, sewage and communication systems. Three requests were received from OEP 19 August, 22 August and 17 September, accompanied by outlines for technical services and field operations to be performed by the Mobile District under Public Law 875. In addition to surveys and assessment of damages as already noted, debris was to be cleared and removed from all non-Federal public roads, streets and other essential public property. Debris was also to be cleared from private property and non-essential public property and other works performed when certified by the state and U. S. Public Health authorities to be essential to public health and safety.

The order came from OEP by telephone on Tuesday, 19 August, after President Nixon had declared the storm area a major disaster area. Twenty-six counties in Mississippi and

one in Florida and Alabama each fell within the Mobile District. A letter confirmed the order later. Colonel Robert E. Snetzer, Mobile District Engineer, called a meeting of his key personnel and outlined the task before them. When Colonel Snetzer ordered that contracts be in effect and operative within a few hours, it appeared impossible.

Contracts were normally advertised for 30 days. Civil works projects usually were advertised for 45-60 days. Supply let out the advertisements. Bids were received and opened and construction recommended awards. Recommendations were referred back to Supply normally in 1 to 4 days. If there were no difficulties, contracts could be let in 5 to 6 weeks. Now the Corps was called upon to let contracts within hours. Though the task seemed impossible, Colonel Snetzer was firm and ordered that his staff proceed.

Calls had come in to the Mobile office on Monday from persons having equipment and desiring to assist in the cleanup. Some of those had had experience in hurricane cleanup, especially after Hurricane Betsy in 1965. Within 48 hours after Camille struck, five contracts were in effect. They were cleaning streets and rights-of-way. Many contracts were negotiated within a day and work continued seven days a week. The contracts included removal of debris from much private property since such property was declared a health hazard by either the United States Health Department or State Health Departments. In some areas it included almost all private property. There were dead animals and inflammable materials to be removed and debris which obstructed repairs to sewage systems.⁵

The Mobile District was authorized to repair or replace damaged public buildings, utilities, and other eligible facilities when requested by local officials. Also an inspection team was given the responsibility for inspecting and documenting eligible rehabilitation work that government entities preferred to perform themselves subject to reimbursement. The Corps was further authorized to give technical and administrative assistance to government entities desiring Federal assistance and reimbursement to them for emergency expenditures.

The Corps' role in providing technical and administrative assistance and direct financial reimbursements to local entities was a departure from the usual OEP procedures. Local governments did not have the resources or knowhow to cope with a disaster of such magnitude. Normally the State of Mississippi would have handled such responsibilities and made the payments, but the task was too great.

Within 10 days the Mobile District had restored freedom of movement on 586 miles of highways and streets. By mid-November about 1.25 million tons of debris had been removed. By that time, that phase of the operation was virtually complete. Contracts had been negotiated for set fees for a piece of equipment and necessary operators for pushing and removing the debris. The Real Estate Division was responsible for securing disposal and land-fill areas. Contracts awarded by the Corps required that available local labor be hired and included the nondiscrimination clause.⁶

Many homes had to be moved from streets and highways. In many cases, the Corps' contractors returned the homes to their foundations, and in doing so, rendered assistance to stricken homeowners. Homes were thus restored for 81 homeowners in Mississippi alone. Services went much further for the town of Pass Christian. At the request of the OEP, the Mobile District assumed full responsibility for restoring all public services. This included utilities, providing a fire truck, police cars, and a temporary city hall.⁷

To meet the crisis, the Mobile District gave priority to the recovery task over all its normal responsibilities. It also called upon other Corps organizations for assistance. A total of 137 civilians and 14 officers from districts and divisions as far away as Portland, Tulsa, and Chicago came to the aid of the Mobile District, and the District Engineer was given command of other military organizations engaged in debris removal. Among those were about 800 Seabees stationed at Gulfport. An Engineer Construction Battalion and a reinforced company from another Engineer Battalion numbering about 900 men were dispatched from Fort Benning, Georgia.

The District Engineer was also responsible for letting contracts and seeing that the terms of such were met. The capability of the Corps increased rapidly. Within a few days there was a tremendous concentration of dump trucks, loaders, dozers, cranes, and other equipment employed in the project. The forces under contract peaked at over 3,000 men.

Most of the contracts progressed smoothly and without incident. It was noted by Corps officials that some trucks delivering debris to disposal areas were arriving with much less than normal loads. Since pay was based on loads hauled, the Corps was paying for more than it was receiving. It became necessary to place inspectors at the disposal areas temporarily.⁸ Colonel Snetzer was directing a vast and complex operation.

Within 10 days after the storm, 586 miles of streets and highways had been cleared. Soon this accomplishment was expanded until 2,400 miles of streets and roads had been cleared and a total of 313,300 tons of debris had been removed. This opening of roads and streets was accomplished by Corps contractors and military units. At first the debris was simply pushed aside to whatever location was available. Once the streets and roads were open, disposal locations were secured and the debris removed.

Particular problems presented themselves which required specialized personnel. Military units under Corps directions disposed of hundreds of dead animals and tons of spoiled fish, shrimp, and food. It was also necessary to dispose of a large stockpile of spoiled fish meal. With all electricity out, all refrigerated foods spoiled and presented problems of disposal unlike that of most debris. Another particular problem was that of traffic. With so few traffic arteries open for the first few days after the storm, problems developed at critical crossings during debris removal as residents began to return and sightseers flooded the area. Contracts were negotiated with the sheriffs of Hancock and Harrison Counties, Mississippi, for additional deputies for traffic control. Other types of specialized contracts included those for demolishing large buildings left standing but structurally unsound, and those for replacing buildings

to their foundations where they had been swept away by the tide water.⁹

By December 1969, work under Public Law 875 had been almost completed. A few small Federal contracts at Pass Christian still required supervision, and a number of city and county contracts for OEP reimbursement had to be monitored. The Mobile District was already anticipating responsibilities under Public Law 79 and was becoming organized to assume this new task though orders to do so were not received until 20 February 1970.

Just about the time Public Law 79 was implemented, a new responsibility was assumed under Public Law 875. The Office of Emergency Preparedness determined that the removal of debris from public-owned navigable waters other than Federally authorized projects was eligible under that law. Public Law 79 had initiated a whole new realm of Federal services, that of cleaning up private property, including private waters. OEP concluded that the cleanup of public waterways more logically belonged under Public Law 875, so additional work was accomplished under that law.

Six snagging contracts and one dredging contract were negotiated. The debris was removed from the waters and deposited at stockpile areas. Clearing contractors working under Public Law 79 removed the material to dumping areas.¹⁰

By mid-January 1970, Colonel Snetzer was notified officially that the Mobile District would be responsible for services under Public Law 79. It was necessary for those seeking assistance to apply through a plan established by the state. Mississippi finalized its plan and started receiving applications on 19 January. By the end of January, the District office had assessed its responsibilities and developed a plan to accomplish them. Authorization was given by OEP 20 February, and the Corps was ready to implement its program.

The Corps was given responsibility for cleaning up private property in urban areas, and all work in agricultural and undeveloped areas was assigned to the Agricultural Stabilization & Conservation Service (ASCS). The Corps, under this arrangement, received

over 80 per cent of the applications. Those applications included reimbursement for work done by the applicant, debris removed by the Corps, a combination of reimbursement and debris removal, and applications for the demolition of structures.¹¹

By 1 March, the Engineering Branch at the Gulfport area office had 60 engineers and engineer technicians functioning. They developed location maps for debris removal and determined eligibility of structures on demolition applications. Over 700 structures were demolished either by equipment rental contractors, or under lump-sum contracts. About 9,000 claims for reimbursement were processed and over \$2,610,000 was paid to individuals who had paid for removal of debris themselves. Over 15,000 applications for removal of debris by the Mobile District were approved.¹² The Corps cleared about 14,300 residential lots and 280 wooded tracts under Public Law 79. About 1,500,000 tons of debris were removed.

By October 1970 the work was virtually complete. Recovery operations following Camille were by far the largest task of its kind ever undertaken by the Mobile District. For the next year after the storm struck, a major portion of the resources of the District, manpower, equipment, and funds, were diverted from normal use to be used to rehabilitate the disaster area. There was considerable curtailment of the civil works engineering program, and a slowdown in routine maintenance of navigation projects. Improvements at reservoir projects had to be delayed.

The adverse effect of Camille on the District's operation was greatly diminished because the storm came at a time when the construction workload was declining. The President announced a 75 per cent cutback in contract awards in September 1969, just after Camille. This resulted in a reduced workload throughout the Corps of Engineers. The Camille assignment precluded the need for a reduction in force in the Mobile District and made it possible to secure aid from many other Corps Divisions and Districts.¹³

Colonel Snetzer was given overall com-

mand of 1,700 uniformed personnel and several thousand civilian contractors and civil service personnel. The work forces under his command operating under Public Laws 875 and 79 were far more than the normal forces under his direction as District Engineer. He was ably assisted by Lieutenant Colonel Paul D. Sontag as Deputy District Engineer of the Mobile District. Together they directed expenditures of over \$49,000,000 in recovery and rehabilitation services.

They were served by career Corps personnel of the Mobile District, who devoted many hours to arduous tasks which demanded much more of them than their normal Corps functions. Many key persons were assigned to temporary duty at one of the nine field offices maintained within the disaster area. Some of those spent many months away from home, serving until the emergency was over.

The effectiveness of the Corps' accomplishments is reflected in the fact that of the thousands of applications for reim-

bursement processed, there were only 180 appeals. This amounted to only about two per cent of the total claims. This is even more amazing when it is considered that Camille was the initial test for Public Law 79, and the Corps was functioning without experience or precedence in the matter. Colonel Snetzer's accomplishments did not go unnoticed. He was personally commended by President Nixon and was awarded the Legion of Merit for his leadership during the early phases of Hurricane Camille recovery and rehabilitation work.

The nature of disasters is such that people are not prepared to meet them in most instances. Since the precise time, place, and nature cannot be anticipated, adequate preparations can seldom be made. Each will require its own unique responses. It is evident, however, that the Mobile District was capable of mobilizing and directing vast resources in a most commendable fashion, thus relieving much suffering, inconvenience and economic loss.

- 3 *Water Resources Development by the U. S. Army Corps of Engineers in Alabama*, printed by the U. S. Engineers South Atlantic Division, 1 January 1967.
- 4 *Ibid.*, p. i.
- 5 L. L. Knight, *The Mobile District Reorientation to the Space Age*, Mobile, 1963, p. 19, 20.
- 6 *Ibid.*, p. 13.
- 7 *Project Maps, Mobile District*, Office of the District Engineer, Mobile, 1969, Sheets 6-1, and 6-7. This source contains a statement of size, cost, purpose, and state of completion of each project.
- 8 *Recreation: Civil Works Projects*, Corps of Engineers, Department of the Army, no date, but information given goes through 1969, p. 35.
- 9 *Flood Plain Information: Pascagoula-Gautier Coastal Area, Jackson County, Mississippi*. Corps of Engineers, U. S. Army, Mobile District, 1970. The Reports of the other studies mentioned are on file in the Mobile District Library.
- 10 For a list of floating plants, see *U. S. Government Moorings, Floating Plant, and Boat Yard*, U. S. Army Engineer District, Mobile Corps of Engineers, Mobile, 1971.
- 11 *Mobile Press-Register*, 27 December 1964.
- 12 L. L. Knight, *The Mobile District Reorientation to the Space Age*, 23.

Chapter XIII

- 1 The history of Camille and facts about the storm have been recorded in a number of publications. See: Department of the Army, Corps of Engineer District Mobile publications *Hurricane Camille: After Action Report*, 1970; *Report on Hurricane Camille*, May, 1970; Office of Emergency Preparedness, *Hurricane Camille: 4 Months of Action*, December 1969; *8 Months After Camille: The Coast and the Virginias*, April 1970; and *Federal Response to Hurricane Camille (Part I) Hearings before the Special Subcommittee on Disaster Relief*, U. S. Printing Office, Washington: 1970.
- 2 "Camille at Columbia" In *Weatherwise*, October 1969.
- 3 *Report on Hurricane Camille: 14-22 August 1969*, Corps Report May 1970, 22, 23.
- 4 Colonel Harry A. Griffith, Briefing for the Chief of Engineers entitled "Mobile District's Hurricane Camille Activities," October 1970.

- 5 Interview with Walter C. Knox, Chief, Construction Division, 13 August 1970.
- 6 *Hurricane Camille: 4 Months of Action*, 12, 13.
- 7 *Ibid.*, 13.
- 8 Colonel Griffith, "Briefing," 1970, 9, 10.
- 9 *Ibid.*, 3, 4.
- 10 *Ibid.*, 15, 16.
- 11 *Ibid.*, 11.
- 12 *Ibid.*, 13.
- 13 For list of Temporary Duty Personnel borrowed from other Districts see *Hurricane Camille: After Action Report*, February 1970, Exhibit 7-2, pages 1-4.

Chapter XIV

LOOKING INTO THE FUTURE

- 1 William H. Stewart, Jr., *The Tennessee-Tombigbee Waterway*, I. Stewart cites W. A. Evans, but did not indicate the source of Evans' information. He did say that the Marquis de Montcalm advised Louis XV about 1760 or 1770 concerning the need of such a waterway. Montcalm died in the Battle Of Quebec in September 1759, and all French territory East of the Mississippi River and all of Canada was ceded to England in 1763. France could have had no interest in the waterway after that date. James H. Stone, *Cotton Gin Port*, 10, also mentions a French scheme to connect the Tennessee and Tombigbee.
- 2 *Ibid.*, 1.
- 3 *Simon Bernard Board of Engineers Report Book*, dated 23 December 1817, in National Archives.
- 4 Stewart, *The Tennessee-Tombigbee Waterway*, 1.
- 5 E. Merton Coulter, *Georgia: A Short History*, 253ff.
- 6 Stewart, *The Tennessee-Tombigbee Waterway*, 2.
- 7 *Ibid.*, 2.
- 8 There are numerous descriptions of the proposed project. For a less technical description see the *Mobile Press Register*, 18 November 1956.
- 9 Alabama, *Journal of the Senate*, 1945 Regular Session, 1, 180-181. See also *Journal of the House* 1945 Regular Session 1, 405.