# Engineers Respond To Operations Other Than War

*By Major Robert M. Ralston and Lieutenant Colonel Douglas L. Horn*

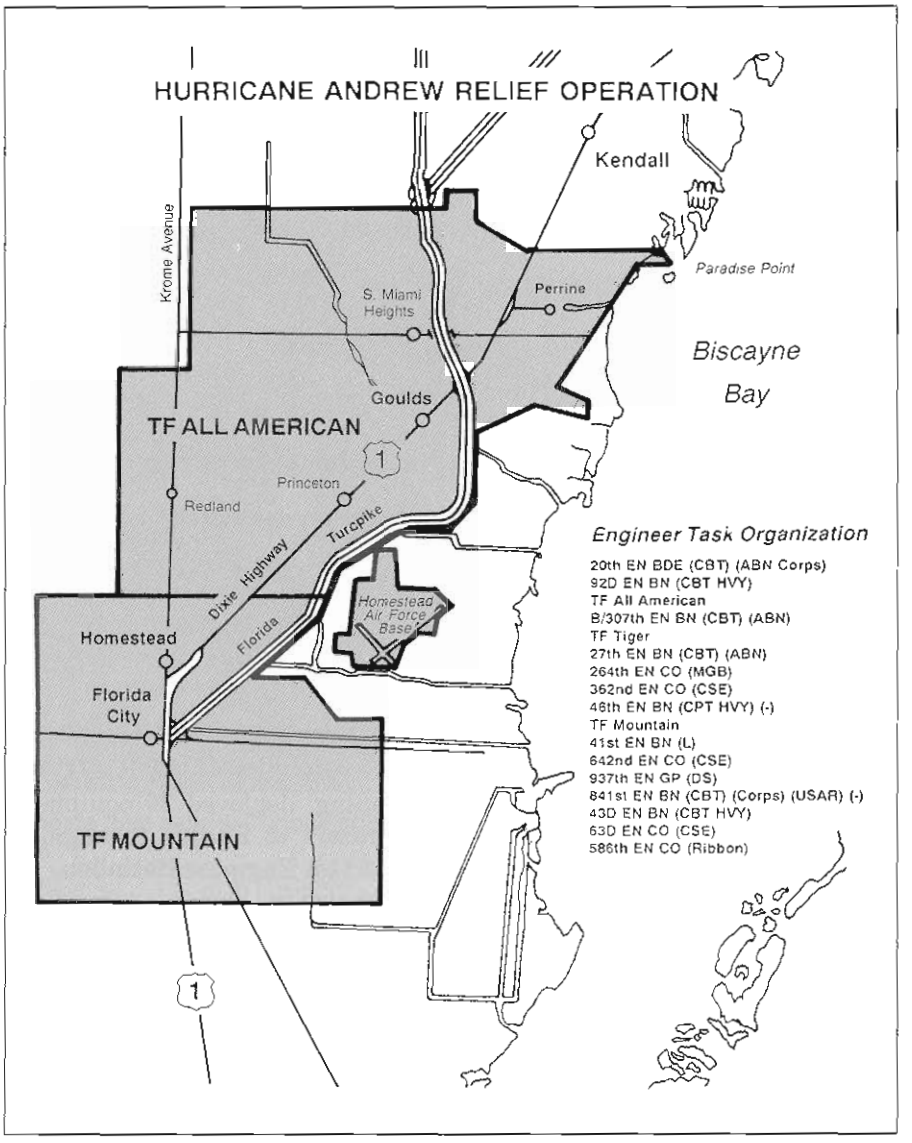
Military operations other than war (OOTW) involving large unit task organizations have been frequent occurrences in the last few years. FM 5-114, *Engineer Operations Short of War,* identifies several operations categories, one of which is disaster-relief operations within the United States and its territories. The 20th Engineer Brigade (CBT) (ABN Corps), stationed at Fort Bragg, North Carolina, has provided small, tailored support packages of soldiers and equipment to assist in disaster-relief operations several times since returning from the Gulf War. Deployment of the brigade and attached engineer units to conduct Hurricane Andrew recovery operations in Florida was the first major participation in OOTW. This article describes the steps taken by the 20th Engineer Brigade in responding to this natural disaster.

## Hurricane Andrew

*24 August*—In the early morning hours, Hurricane Andrew slammed into the southern tip of Florida. The eye of the hurricane passed directly over Homestead Air Force Base and the surrounding communities of Homestead and Florida City with an estimated wind speed of more than 160 mph. The air base was destroyed, most trailer parks in

the area were completely demolished, and the majority of housing in adjacent communities sustained heavy damage. The area lost all basic services.

The first military engineers to respond were soldiers of the 841st Engineer Battalion (USAR) stationed in the Miami and Jacksonville, Florida, area. Although the hurricane had destroyed their armory and many of their soldiers' homes, volunteers immediately began debris-removal operations, clearing main roads throughout the disaster area, the airstrip at Homestead Air Force Base, and select locations designated by city officials for the first of the dislocated personnel tent cities. Additionally, they provided transportation for the Red Cross and began initial debris-removal operations in Florida City.




## Alert

*27 August*—Late in the day, Forces Command (FORSCOM) alerted the XVIII Airborne Corps and directed them to send an initial logistical task force to aid in relief operations. The Corps directed the 20th Engineer Brigade to begin deployment of forces and to have an airborne engineer battalion on the ground within 24 hours. With the first airplanes inbound, the brigade began crisis action planning for deploying forces in one-half the time of its normal 18-hour response time. In the planning stages, the brigade used the XVIII Airborne Corps' contingency plan for disaster-relief operations as a guide. Engineer units throughout the eastern United States were alerted by FORSCOM to be on call.

*28 August*—By 0530 hours, the brigade assault command post (ACP) had landed at Opa-Locka Airport, in North Miami, and was heading to the Homestead area. At 0600 hours, the first company of the 27th Engineer Battalion (A Co) began loading C5 aircraft at Pope AFB, North Carolina. Restricted by competing airflow requirements, it would take two days for the 27th Engineer Battalion to close in to the area of operations.

## Assessment

*29 August* —Initial reports from the brigade ACP indicated that the situation was extremely bad. Even after five days, there appeared to be little organization to the relief effort. The main mission in the initial stages appeared to be strictly debris removal from land lines of communication. Based on the assault CP's assessment, brigade forces were told to leave their dozers and graders behind and to add extra bucket loaders when possible.

*30 August*—The brigade commander, Colonel Bob Melchior, arrived in Miami to survey the damage. He immediately asked FORSCOM to authorize the deployment of more U.S. Army engineers to assist in the relief efforts.

The brigade also began coordination with the U.S. Army Corps of Engineers (USACE),

## Hurricane Andrew Fact Sheet

***Deaths:*** **55 in south Florida, Louisiana, and the Bahamas**

***Property damage:*** **Estimated over $20 billion**

***People left homeless:*** **250,000**

***Businesses destroyed or damaged:*** **82,000**

***Lost jobs:*** **85,000**

***Crop damage:*** **Andrew destroyed or damaged 80 percent of Dade County, Florida's 3,655 farms, at an estimated loss of $1.04 billion**

Jacksonville District, to define priorities of work and to coordinate the brigade's efforts with the district's. USACE had contractors performing temporary roof repair and minor debris removal. The brigade concentrated their planning effort in those areas not yet covered by USACE contracts. Attempts were made to coordinate with Joint Task Force (JTF) Andrew, but the JTF was still being formed. Later, the JTF engineer staff would be headed by BG Russell Fuhrman, commander of the North Central USACE Division, and staffed by the 36th Engineer Group, Fort Benning, Georgia, and by reserve engineer officers called to active duty.

### Build Up of Engineer Forces

*30 August*—The 27th Engineer Battalion closed up on Homestead Air Force Base, set up an operations base at a local junior high school, and began disaster assistance operations in the surrounding communities.

*31 August*—The 43d Engineer Battalion (CBT HVY), Fort Benning, deployed 20 equipment operators to Florida to augment the 841st Engineer Battalion.

*1 September*—The XVIII Airborne Corps assault CP (ARFOR commander) and the 2nd Brigade, 82nd Airborne Division (TF All American), had deployed to the area, and the advance parties of the 10th Mountain Division (TF Mountain) began to arrive. Also, the 27th Engineer Battalion was augmented by the 264th Engineer Company (MGB) and the 362nd Engineer Company (CSE) of the 20th Engineer Brigade, and the remainder of the 43rd Engineer Battalion deployed.

*2 September*—The 937th Engineer Group, Fort Riley, Kansas, the 46th Engineer Battalion (CBT HVY) (-), Fort Rucker, Alabama, and the 92nd Engineer Battalion (CBT HVY), Fort Stewart, Georgia, were ordered to deploy. Additionally, the 34th Engineer Battalion (CBT HVY), Fort Carson, Colorado, and the 62nd Engineer Battalion (CBT HVY), Fort Hood, Texas, were alerted, although none of these battalions were to be deployed.

*3 September*—Six clean-up contracts totaling $90 million were signed by USACE. Contractors began mobilizing the next day, with full-up operations estimated to take up to a week.

### Task Organization of Forces

Based on troop density and the engineers now available, as well as the location and severity of hurricane damage, the area was divided into sectors, as shown on the map (page 9), with the engineers task organized as shown. The engineer forces were augmented by USACE-contracted commercial equipment operators. These resources were controlled by U.S. Army engineers. While the use of the contracted equipment provided challenges, such as training soldiers to be contracting officer representatives, it considerably enhanced debris-removal operations.

### Establishment of Bases of Operations

*5 September*—All deploying engineer units had closed in to the area of operations. A key player during these early stages of the relief effort was the Brigade Judge Advocate General (JAG) officer. Damage to the area, the number of displaced civilians, and the growing number of deployed units to the area made living space hard to obtain. The JAG was able to obtain excellent locations and prepare the necessary Rights of Entry forms. Engineers were located in such areas as the Metro Zoo, a beachside marina, a high school, a retirement home, and a county recreation camp.

A friendly resident watches the 27th Engineers load debris. Curious children added a safety challenge to the hurricane clean-up efforts.

The 20th Engineer Brigade conducted operations from a large, vacant warehouse centrally located in the disaster area and adjacent to U.S. Highway 1. An adjacent field was turned into a helicopter landing zone. A lack of interoperability of communications initially caused problems in coordination. Several engineer units had not been issued mobile subscriber equipment. The large warehouse allowed for housing engineer advance parties, maximizing initial coordination.

## Areas of Responsibility

During the time frame required to deploy all military engineers, those units on the ground were busy with a varied amount of work. After the area's main roads were opened, debris-removal operations became a lower-priority mission. Clearing of areas for the establishment of disaster assistance centers (DACs), life support centers (LSCs), and mobile kitchen trailer (MKT) feeding sites and the removal of the associated trash and refuse from those areas became priority tasks. Overflights of the damaged areas with Dade County management officials also defined the military work effort as the debris-removal needs of the county were considered.

## School Opening Takes Priority

Opening of Dade County schools became a major milestone for the metropolitan area to start on the road to recovery. JTF Andrew, in coordination with the county school board, developed a list of schools that were to reopen. The brigade obtained this list and purged it, identifying those schools located in the Corps sector. The engineer forces in each division sector were given their respective schools list and told to begin work on them.

***6 September***—JTF Andrew issued the school list to the XVIII Airborne Corps, but it included 58 schools located out of sector. The brigade was tasked to determine the level of effort required to open the out-of-sector schools.

***7 September***—The 20th Engineer Brigade sent eight teams from the 92nd Engineer Battalion to recon the 58 schools. This one-day recon was accomplished by using eight OH-58 helicopters flying predesignated sectors. The recon reports were consolidated and given to the XVIII Airborne Corps that evening.

Later that night, Corps issued a fragmentary order giving the 20th

The 43rd Engineers construct one of many temporary roads in the tent cities.

Engineer Brigade the mission of clearing the debris from the out-of-sector schools. Over the next six days, the brigade coordinated engineer unit efforts with the Dade County School Board repair crews and, via USACE, with the local megacontractor. Additionally, U.S. Navy SEABEE engineers helped clean up the classrooms and offices.

An interesting problem developed because debris had not yet been cleared from communities near the school. When local residents saw the schools being cleared, they began placing their debris on the school grounds. On more than one occasion, a school would be declared cleared one day and require more work the next. However, as the megacontractors increased their work effort in the neighborhoods, the problem diminished.

## Defining Success

*9 September*—The first meeting between the JTF engineer, USACE, and Corps and Division engineers took place to reach consensus on the definition of success for the military engineers. With the forces on hand, the brigade estimated it would take over six months to remove all the debris left by the hurricane. Therefore, it was recognized early on that a transition plan with USACE was needed to hand over relief operations when required. Furthermore, as the megacontractors mobilized, their efforts began to overshadow the military's, as well as cause duplicity of effort.

It was decided that the priority for the military engineer effort would be school clearing, refuse removal from relief centers, and then debris removal. Also, Army engineers would provide vertical and horizontal construction effort in the construction of two additional relief camps. The first two camps had been built and were being maintained by U.S. Marines. The U.S. Army had responsibility for the next two camps.

Fortunately, the combat heavy battalions had brought their vertical sets, kits, and outfits. They constructed wooden flooring, installed lights and power, and installed basic plumbing. The only delays in the projects were caused by material delays and by initial indecision of local officials on which building codes should be followed. However, the initial decision not to include graders, dozers, or other horizontal construction equipment proved incorrect in the long run. In the tent city construction projects, graders and compaction equipment were needed to construct and grade

temporary roads and to level rough areas. While the combat heavy battalions had brought some graders, no compaction equipment had been deployed.

Dozers also proved to be useful in debris-removal operations. The debris caused by Hurricane Andrew had been estimated by various government agencies to equal 35-years worth of trash for area landfills. Special permits were obtained to burn the debris, but additional dozers were needed to consolidate the material. Military dozers with operators were provided to the public landfills to help accomplish this task.

*12 September*—The XVIII Airborne Corps released two companies of the 27th Engineer Battalion for redeployment to Fort Bragg and subsequent deployment to the Jungle Operations and Joint Readiness Training Centers. Corps also released one company of the 92nd Engineer Battalion for redeployment to Joint Task Force 6 construction.

## Completing the Mission

*13 September*—The last school was cleared.

*15 September*—The military's initial debris-hauling effort was critical to the mission's success because it enabled megacontracors and residents to enter areas and begin their clean-up efforts. However, by this date the military's portion of total cubic yards hauled had dropped from almost 100 percent to about 6 percent.

By the middle of September, electrical power had been restored to many of the areas, grocery stores and businesses were beginning to reopen, and the communities were beginning the long process of rebuilding. Refuse removal was being assumed by contractors, and the military's primary mission became spot checking DACs, LSCs, and MKT feeding sites to pick up overflow refuse. Furthermore, a notable difference could be seen during the daily aerial engineer recons as residents cleaned up their homes and neighborhoods.

**"Engineer units are uniquely qualified to be a key player in successfully accomplishing OOTW missions."**

It was then that the focus of the Army engineers shifted. Debris-removal operations shifted from area coverage to point targets such as parks, churches, public areas, and nonprofit organizations. The megacontractors were concentrating on area debris removal and would not start on these specific areas of concern for a long while.

The point targets gave the engineers an opportunity to make a lasting impact on the communities. In anticipation of redeployment within the next two weeks, only short-term projects were accepted. This enabled the engineers to complete many point targets instead of half-completing a few large ones. The cleared parks and public areas provided campsites for civilian relief volunteers. Local officials appreciated this concept as more parks and public areas were restored.

## Redeployment

*20 September*—As the brigade's organic units began redeployment to Fort Bragg, the remainder of the attached engineer units prepared to redeploy. The 92nd Engineer Battalion would remain to support the 10th Mountain Division, which would soon assume the role of the ARFOR commander. The 92nd Engineer Battalion would eventually redeploy on 7 October. However, it was several days after the military engineers had transitioned their missions to contractors before redeployment planning commenced in earnest. Redeployment was a sensitive issue—the military did not wish to portray redeployment as abandonment of the relief efforts.

When the redeployment order came, it released the 20th Engineer Brigade, the 937th Engineer Group, two combat heavy battalions, and two engineer companies, with redeployment to be complete within three days. Because no prior coordination was allowed, long delays in obtaining the necessary line haul occurred.

Overall, the mission of the military engineers was a success. They provided an immediate presence and debris-hauling capability, assisted in humanitarian relief missions, and gave area residents a sense of security and hope. For the first five days of their deployment, they were the only "engineers" present, and for the first days of the megacontracts, they provided a more-than-equal capability. Later, they took the lead in removing debris from schools. In the final days, they opened many parks and public areas, helping to restore normalcy to the disaster area. While facing many challenges and learning many lessons, the military engineers excelled, providing relief to those in need.

## Special Considerations

Engineers involved in operations such as Hurricane

Andrew can find useful checklists in the current manual on OOTW (FM 5-114). Some additional considerations are:

- ***Coordination with government officials.*** Engineers must coordinate with federal officials, primarily FEMA and USACE. Furthermore, coordination must also be made with state, county, and city officials. Commanders can identify missions and priorities, allowing key tasks to be quickly started. This coordination will also establish mission objectives, major milestones, and the definition of success.
- ***Coordination with civilian contractors.*** Coordination between the military engineers' work effort and that of civilian contractors is vital in preventing duplicity of effort and conflicts. Once mobilized, contractors do not want military engineer work efforts to interfere with their profits in contracted engineer work.
- ***Standardized relief camp construction.*** Construction standards for life support centers must be determined from the onset. These standards, whether federal, state, or local, will affect the work efforts and materials required to complete the centers. Hesitation or changing requirements will only delay completion.
- ***Standardized map usage.*** Many types of maps are available, from highway to realtor to U.S. Geological Survey. A timely decision is required to establish the standard theater of operations map.
- ***Lead time for redeployment.*** Several days' lead time prior to the redeployment date is required to ensure a smooth and timely transition. Contracting for the line haul required to move combat heavy battalions takes several days to accomplish. If required, the planning for redeployment can be conducted as a classified operation.

## Summary

The conduct of JTF Andrew's disaster-relief operations was accomplished within the ARFOR by overlaying the civilian area of effort with a military task organization operating within unit boundaries. This allowed all military units to conduct coordinated relief operations upon arrival into the area of operations. Engineer units are uniquely qualified to be a key player in successfully accomplishing OOTW missions. It is important to plan to coordinate with both the public sector and the appropriate government agencies, a requirement not normally associated with a unit's war-time mission. Hopefully, this article has provided some pointers on successfully executing the next operation.

*MAJ Robert M. Ralston currently serves as training officer of the 20th Engineer Brigade. His most recent assignments include operations officer for the 20th (during Hurricane Andrew Relief Operations) and commander of C Company, 307th Engineer Battalion, 82nd Airborne Division. A graduate of the Command and General Staff College, he holds masters degrees from Purdue and the University of Florida.*

*LTC Douglas L. Horn currently serves as the S3, 20th Engineer Brigade. His most recent assignments have been as brigade operations officer and battalion XO. A graduate of the Command and General Staff College, he holds a masters degree from the University of Colorado.*

### Lessons Learned

The February 1993 edition of ENGINEER, page 26, presented some lessons learned that should help platoons, companies, and battalions deploying for disaster relief. Senior commanders should consider some additional "higher headquarters" concerns:

- Getting engineer intelligence and assessment teams on the ground early.
- Anticipating the need for haul capability (such as bridge trucks), vertical construction, and horizontal capability (compaction and grading in life support centers).
- Planning for and deploying early liaisons for federal, state, and local governments and municipal utilities.
- Pushing for early resolution of defined objectives, the definition of success, and liaison procedures.
- Knowing which officers in the command have contracting officer representative (COR) or USACE experience. They should also consider OPDs for COR functions such as contract administration and work effort/trip ticket reporting systems.
- Coordinating early with USACE on contractor priorities and work areas.
- Ensuring that maneuver commanders know USACE contractor procedures, capabilities, and initial work areas.
- Identifying community requirements as soon as possible. Priority missions may be short notice and outside the area of operations. They should look at the calendar and think civilian; for example, schools and elections.