

# The *Columbia* search and recovery effort: An overview

By the Federal Emergency Management Agency



## CLOCKWISE FROM TOP

Astronaut Michael Lopez-Alegria talks with fellow volunteers in the evidence cage at Camp Corsicana.

jsc2003-0014 Photo by James Blair

Volunteers arrive at Carswell Naval Air Station in Fort Worth, Texas.

sts1071-306-020 Photo by Bill Stafford

A search and recovery worker scans a field for debris.

jsc2003-00154

NASA Administrator Sean O'Keefe shakes hands with local officials in Lufkin, Texas.

jsc2003c2635 Photo by James Blair

Space Shuttle Program Manager Ron Dittmore talks with volunteers in a hanger in Lufkin.

jsc2003c26397 Photo by James Blair

Michael Sarafin (left) of the Systems Division of JSC's Mission Operations Directorate, along with John Casper of the Space Shuttle Program Office, check over search data at the Lufkin Command Center.

jsc2003c26339 Photo by James Blair

Barbara Zelton, Deputy Director for Space Flight Awareness in the Safety, Reliability and Quality Assurance Office, logs data at the Lufkin Command Center.

jsc2003c26343 Photo by James Blair

On Feb. 1, when the Space Shuttle *Columbia* broke apart and fell across East Texas and western Louisiana, no one could envision the magnitude of the event and the tremendous number of people and agencies that would eventually become a part of the recovery effort.

## A network of teamwork

Shortly after the tragedy, President George W. Bush issued emergency declarations for Texas and Louisiana. Within hours, federal and state agencies deployed teams to the disaster area to assist local fire, law enforcement and emergency management authorities. Initially, more than 60 agencies – including volunteer and private groups – responded with personnel, supplies and equipment. Disaster Field Offices (DFO) opened at Barksdale Air Force Base in Louisiana and in Lufkin, Texas, and a satellite DFO was established in Fort Worth, Texas. The Lufkin DFO was the regional center of all search-related operations.

The Federal Emergency Management Agency (FEMA) coordinated the response and recovery operations. NASA, with the assistance of the Texas Forest Service (TFS), the U.S. Forest Service (USFS), the Environmental Protection Agency (EPA) and many others, supervised the search for Shuttle material.

From the beginning, the priorities for the agencies were three-fold: ensure public safety, retrieve evidence – pieces of the Shuttle that could ultimately determine the cause of the tragedy – and reimburse expenses of state and local governments and private citizens who may have sustained property damage as a result of the accident and search.

NASA quickly identified potential hazardous materials, such as tanks containing toxic substances or unexploded pyrotechnic devices, and once found, the EPA secured and removed hazardous material immediately. The EPA also worked with state and local authorities to quickly clear school campuses and public access areas, and tested air and water samples taken along the flight path for Shuttle contaminants. Using the resources of the Emergency Response and Removal Service (ERRS) contractors and the U.S. Coast Guard's Gulf Strike Team, EPA found no evidence of hazardous material in the atmosphere or drinking water supplies.

Early in the recovery effort, teams from NASA, the Federal Bureau of Investigation, National Guard, Urban Search and Rescue organizations, the Department of Public Safety and others conducted a successful search in East Texas to recover and bring home *Columbia's* crew.

Three days after the accident, local fire, police, volunteers, Texas Department of Public Safety officers (DPS), Louisiana State Police, and EPA, USFS, TFS and National Guard units from Texas, Louisiana, Oklahoma and New Mexico began clearing Shuttle debris in high-traffic areas. A one-page set of guidelines prepared by the State of Texas, NASA and EPA enabled the teams to collect, document, tag and transport non-hazardous debris without prior EPA or NASA clearance. These initial teams ended their search operations Feb. 17.

The TFS, under the direction of NASA, now assumed responsibility for search activities in the field, which involved extensive air and ground searches in a 10-mile by 240-mile corridor along the projected Shuttle flight path. The TFS – through the Texas Interagency Coordination Center – called upon experienced management and firefighting crews from across the nation and Puerto Rico. The air operations, managed by TFS, included up to 36 helicopters and 10 fixed-wing aircraft.

Also involved in the air search, but not managed by TFS, were motorized paragliders, an ER-2 (similar to the U-2), a specially equipped DC-3, and the Civil Air Patrol (CAP), among others. CAP volunteers put in more than 800 search-days of flying in the weeks just after the accident and covered the flight corridor area west of Fort Worth to the New Mexico border.

The USFS, Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service, along with state forestry organizations and contractors, provided the greatest number of crews – drawing from their expertise in wildland firefighting. More than 4,000 people at a

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time searched 12 hours a day, seven days a week. Camp crews were located at sites near Hemphill, Nacogdoches, Palestine and Corsicana. Their goal was to find as much material as possible before spring vegetation growth made the search more difficult.

The U.S. Navy supervised the water search activities in Lake Nacogdoches and Toledo Bend Reservoir, located at the eastern end of the 2,400 square-mile search area. Beginning on Feb. 22, 60 divers from the Navy, Coast Guard, EPA, DPS, Houston and Galveston police and fire departments, and Jasper County Sheriff's Department combed the lakes using sophisticated sonar-equipped boats to help identify Shuttle material.

## Search challenges

As in any operation of this magnitude, the hazards for all the searchers were challenging. Ground crews slogged through mud, dense vegetation and rocky areas; faced wild hogs, snakes and other vermin; and dealt with the ever-changing weather. Divers reckoned with the murky waters of the East Texas lakes, along with underwater forests and various submerged hazards.

The crash of a Bell 407 helicopter on March 27 was a tragic reminder of the inherent risks confronting Shuttle disaster workers in the field. Two members of the air search crew, Texas Forest Service employee Charles Krenek of Lufkin and pilot Jules F. "Buzz" Mier, Jr. of Arizona, died while searching for debris over the Angelina National Forest in San Augustine County, Texas. Three other crewmembers – Matt Tschacher, USFS from South Dakota; Richard Lange, United Space Alliance, Kennedy Space Center; and Ronnie Dale, NASA, Kennedy Space Center – were injured.

Air operations were suspended until it was determined that flights could resume under the safest possible conditions. Air searches resumed April 10.

## Saying thank you

The overwhelming response of the people of East Texas and western Louisiana and the skill with which they responded in the hours, days and weeks after the accident did not go unnoticed. NASA Administrator Sean O'Keefe and other officials made several trips to the area and spent time with community leaders and search crews in all of the operations. The Deputy Secretary of the U.S. Department of Agriculture, Jim Moseley, and Dale Bosworth, Chief of the U.S. Forest Service, toured the sites, spending time in the field and thanking everyone for their help.

Astronauts, who lost their friends and coworkers in the Shuttle tragedy, made themselves available for numerous evening presentations at the base camps and tirelessly signed autographs into the late evening hours. They also gave educational talks at schools and attended city council and other community meetings. At each event, their presence underscored the importance of the recovery mission, and they continually thanked each and every person for their tremendous support in all areas of the recovery process.

The Columbia Recovery Recognition Event, cosponsored by NASA and FEMA, marked the end of this phase of the search. The dinner was held at the Lufkin Civic Center on April 29 and was attended by almost 700 people. Representatives from state and local emergency management agencies and volunteer services, along with elected officials, were recognized for their participation in the recovery operations.

On April 28, NASA opened a Columbia Recovery Office at Johnson Space Center to continue search operations on a smaller scale, and to respond to any future discoveries of Shuttle materials.

Individuals suspecting that they may have discovered a piece of *Columbia* material should call the toll-free Columbia Recovery Office hotline at 866-446-6603.

## Facts concerning the *Columbia* Shuttle recovery efforts\*

- After three months, search personnel recovered more than 82,500 pieces of Shuttle debris equaling a total weight of 84,800 pounds, or almost 40 percent of the total dry weight of the Shuttle.
- Ground, water and air searches combined covered more than 2.28 million acres.
- Water operations successfully identified more than 3,100 targets and covered 23 square miles.
- More than 16,500 ground search personnel and their support personnel searched an unprecedented 680,748 acres.
- Total man-hours utilized in the recovery effort amounted to approximately 1.5 million, performed by approximately 25,000 personnel.
- Under the FEMA Public Assistance program, \$10 million is the amount projected for Texas to reimburse eligible costs associated with the recovery effort. As of May 1, \$3.98 million has been obligated. For Louisiana, projected reimbursable payments are \$500,000 while \$396,000 has been obligated.
- Outside Texas and Louisiana, searches have been concluded in New Mexico and California. Searches continue in Nevada and Utah.
- More than 130 federal, state and local agencies have participated in the recovery effort.
- The operation was supported by more than 270 organizations such as businesses and volunteer groups.

\*as of May 5, 2003



Air Force representatives to the Columbia Recovery Task Force are seen working at the Barksdale Air Force Base's Incident Command Center.  
jsc2003c08406 Photo by Ed Wilson



Volunteers in Lufkin, Texas, share a meal.  
jsc2003c26419 Photo by James Blair



A worker sorts bags of debris.  
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